

# University news

A CHRONICLE OF HIGHER EDUCATION & RESEARCH APRIL 1, 1977 80 PAISE



Dr. S. Chandrasekhar, Vice-Chancellor of Annamalai University, receiving the Degree of LL.D. (Honoris Causa) at the 14th annual convocation of Punjabi University, Patiala.

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(CHANDIGARH)**

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**Desirable**

Work experience in the field of Labour Laws & Tax Laws respectively.

vely or Diploma in Labour Laws & Tax Laws respectively.

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**M. S. Ramamurthy  
REGISTRAR**

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

*Editor : ANJNI KUMAR*

## Non-Teaching Employees in West Bengal

Universities in West Bengal are faced with a serious crisis. The non-teaching university employees of West Bengal, numbering more than 8,000, went on strike from 8th March to 12th March. During this period the working of all the seven State universities was almost paralysed. But Calcutta felt the maximum impact because it has almost 7,000 employees out of 8,000.

The immediate cause for this sit-in was the adoption and implementation of Mukherji Committee's recommendations by the State Government. The disparity in pay structure of the different universities in Bengal, their staffing pattern and various other anomalies in their emoluments had been agitating the non-teaching staff for quite some time. This had created problems for the Government as well. With a view to restructuring and rationalising the pay scales so as to be at par with the State Government employees, a review committee under the chairmanship of Dr. P.B. Mukherji, former Chief Justice of Calcutta High Court, was appointed sometimes ago. The committee has recommended parity between the salary drawn by the university non-teaching staff and the corresponding State Government employees. They have been given the option to retain their existing scales of pay or to draw pay according to the revised pay scales provided certain conditions were fulfilled by end of March.

This position is not acceptable to the employees for various reasons. The main ground on which they have raised objection to the Government decision is that the new pay scales are in many cases inferior to the existing pay scales and naturally they would not accept these inferior scales. The annual increments under the new scheme have been much reduced and in some cases are even lower than what is already in existence. They have also pointed out that though the grades for officers and professors in universities and colleges have considerably improved in consequence of the U.G.C. recommendations, emoluments of non-teaching employees have been lowered.

The memoranda on this issue have been channelled through the Syndicate to the Government which were accompanied by occasional demonstrations and deputations by the employees but all efforts have been abortive so far. The University employees believe that the authorities are sympathetic and will cooperate with them to remove the injustices through arbitration. As a matter of fact the State Vice-Chancellors in their recent meeting with the Education Minister have emphasised these facts and have also appealed to the Chief Minister to open a dialogue with the striking employees.

In passing it may be mentioned that Dr. S.N. Sen, former Vice-Chancellor of Calcutta University, Mr. Dilip Chakravarty, two other members of the Review Committee, had held different views in the matter and had tendered their resignations from the committee in protest against the decision to bring down the pay scales of non-teaching university employees. In fact, Dr. S.N. Sen had suggested certain formulae and compiled data to prove that if the employees continue to enjoy the existing salary, the Government would in no way be a loser in the long run.

The State Government is still considering the demands of the employees. According to newspaper reports, the recent increase in dearness allowance announced by the State Government has left out the case of University employees. The State Education Minister recently said that the pay scales of the employees were not going to be revised and at present the question of any further amendments does not arise. Employees' Union leaders however claim that the strike has been a well-coordinated and successful one. In view of the coming examinations and possible inconvenience to the students they have decided to resume strike sometimes in April if their demands are not fulfilled.

# Role of Universities in Environmental Studies

S. Santanagopalan\*

Social and economic developments have many consequences and among them, the effects on the way people think and feel about themselves, and on the standards by which people organize their lives appear to be important. In the last 30 years, there has been a dramatic increase in the degree of industrialisation, in the rate of depletion of natural resources and in the affluence of the developed countries.

Industrialization has led to greater demands on raw materials for increased demands for energy. Man has used technology in his attempts to master his natural environment for several years. Cottage industries have become factories. Vast energy for the factories were obtained from coal, and in recent times, a considerable amount of energy is now being produced by burning petroleum and natural gas, by nuclear power stations and by using hydro-electric plants. The demand for energy appears to be insatiable. It is estimated that the demand for energy which was trebled between 1950 and 1970, is expected to be doubled further by the middle of 1980s. If the per capita rate of energy consumption and the population increase are compounded, the growth rate of energy consumption would be 10 fold in 50 years and hundred fold in 100 years.

This raises a very important issue in regard to environmental studies, because atmosphere pollution is a natural and unavoidable consequence of burning of coal and of oil. A few pollution can be removed and the effects of others can be reduced, but some pollution is absolutely inevitable. Of course, the Government being responsible for the welfare and health of the people, should take effective steps in finding solution for the environmental problems. But Government left to themselves may not be able to do much in this direction. Since the university is interested in the community which sustains it, it has more responsibility in view of the increased public awareness about the environment. There is no doubt that universities have a powerful contribution to make to the solution of the environmental problem. The universities, by their commitment to research and to teaching and by the presence of all disciplines, should be the proper agencies who can give a real solution to the problem. Universities should become more involved in the management of environmental affairs.

Everybody agrees that environmental problems appear to be a global one; but they disagree on how to solve them. The difficulty in reaching agreement

on solutions raises because the social sciences as well as natural sciences are involved in the problem. Scientists may agree on biological facts, but when it comes to the question of interpretation of sociological, economic or political considerations, they may differ. Biological facts may give one solution but there may be several solutions to an environmental problem on social considerations and sense of values. Here the natural sciences, including engineering, can be combined with the social sciences and the humanities, and evolve a most acceptable solution. Because virtually all disciplines have some relevance to environmental problems. Solutions to environmental problems can be arrived at if there is a total disciplinary approach. Scientific research is the answer and this is possible by the participation of the university.

There is an urgent need for an increased public awareness and responsibility about the environment. There is also need for training of environmental experts. Thus teaching becomes an important factor in dealing with environmental problems. All these are possible only in the universities where teaching, research and training in a total disciplinary context can be organised. There is no doubt that universities have a powerful contribution to make to the solution of environmental problems. The university can design courses on environmental studies, both at the degree and diploma level.

The problems of urban studies and environmental studies have attained great importance in some of the advanced countries in the world. This bears testimony to the fact that some of the Universities have set up Chairs in these subjects, because of the new professional opportunities opening up in these fields to which the universities can respond by establishing postgraduate diploma programmes in these subjects.

The university can adopt a policy of gradual development of environmental studies, making use of the existing staff of the departments who combine their interests in their respective basic issues which concern the environmental studies. By doing so, a sizeable programme of the existing departments can be taken up with lesser cost to start with and the university may organise undergraduate studies leading to the training of climatologists, geographers, resource managers, sociologists and economists, ecologists, chemists, with a strong grounding in their basic discipline plus an appreciation of the current environmental problems. To build on this, a postgraduate diploma in environmental studies can be thought of. Active research programmes in a number of areas covering environmental studies may be thought of. As a supplementary, a series of symposia on environmental topics could be organised by the university.

As an adjunctive to the environmental studies, a department of Urban Studies can be organised. This can play an effective role in the modern days of urbanisation and help us solve many problems that arise therewith. Let us examine some of the sugges-

\*Deputy Registrar, Madurai University.

tions for introducing courses on 'Environmental Studies' in universities.

In view of the growing interest in environmental problems, many people are concerned professionally with the environment at present, particularly about air, noise, water and land, population and recycling. Such people are those in some Government departments, dealing with environmental controls, managers of national parks and playgrounds, ecologists with commercial organisations, city planners and public health authorities. But there are many other people whose work is affected by environmental issues. In this group, we can include architects, chemical engineers, geographers, economists, teachers and journalists. People connected with any of these fields should be able to specialise in environmental matters. All subjects under the Sun come under the purview of the environmental studies. It would be necessary for a person to become a undergraduate in environmental studies to choose one major discipline with supporting subjects from a wide range available and dealing with other aspects of the environment. So the universities should take upon themselves the task of training suitable person who would be able to tackle a number of problems.

A course in environmental studies can be undertaken only by the graduates who have already have some relevant professional experience.

The following may be considered as the main subject of study

- |                   |                         |
|-------------------|-------------------------|
| 1. Biology        | 5. Economics            |
| 2. Man in Society | 6. Mathematics          |
| 3. Chemistry      | 7. Physics              |
| 4. Geography      | 8. Teaching (Education) |

A biologist's contribution in solving environmental problem may be through the insights of ecology. In studying this, a broad back-ground in science subjects, i.e. introductory science course in biology, physics, chemistry, statistics and mathematics may be provided. The following topics may be covered : introductory ecology, genetics, plant structure and functions, climatology, animal structure and functions. Besides the following may be usefully added : introductory biochemistry, plant evolution, computing, physics and a little bit of calculus.

Besides the following topics may be studied : measurements in ecological system, vertebrate physiology, plant physiology, vertebrate zoology, animal structure and functions, biochemistry, advanced genetics, electronics, biology of fishes, biology of mammals, cytology and evolution, micro climatology, numerical analysis.

They should study the man in the world of Life and the man in the Society. The following topics included under behavioural sciences should also be covered under environmental studies : (1) Person and Society (2) Introduction to the study of Society (3) Modern Communities (4) Elements of Indian Politics (5) Industrial Revolution, Aesthetics, structure of Law.

The relation of the individual to the physical environment should be studied. Several areas of recent developments, viz., environment psychology and ergonomics which concerns the relationship of the individual to machines or physical structures, may be profitably added.

Relevant courses is perception, or power to understand sensory processes and perception, perceptual development may be introduced. In order to handle this essential study, it would be necessary to include statistical courses such as Applied Statistics or Statistics for the Social Sciences. That is the studies of Biology and Mathematics are essential.

To understand and obtain a background in science subjects, elementary scientific principles should be taught as a general course. Based on this, it would be essential to have all the three chemistries later. An Introductory course in ecology is desirable. Study of Analytical Chemistry is also essential.

Studies of the atmosphere, the land surface and pattern of economic activity and settlements and the relationship that these bear to human well-being may also be included. The study of Geography and the other disciplines of earth sciences like Geophysics and Geology with their subsidiary fields such as petrology, palaeontology, seismology or economic Geology may be usefully added.

The basic idea of the course should be to enable a person to have an informal view of the world in which he lives and be able to meet the needs of the specialist seeking a basic training leading eventually towards professional employment in the fields of urban planning, environment management, field geology and mineral exploration. The person should be equipped with basic additional knowledge in Physics, Mathematics and Chemistry, Human Geography, the Planet Earth, Earth materials, etc. The overall views of human and physical global patterns which are of general interest to all students, may be included.

Geography of natural resources, urban geography and Climatology (meterology) may be included in the study. In the field of economics, there may be many branches which have a bearing on environment. The above as well as other allied branches of knowledge can be imparted in the courses organised by the universities. □

# Brain Drain

G.D. Sharma\*

The transfer of technically and highly qualified manpower from one country to another country is termed as brain drain. The definition is widened with the inclusion of highly qualified manpower who are working in the home country for research organizations and the governments abroad. It also assumed a further dimension when research projects financed by the developed countries were carried out in the home country and the results of such studies were used for general as well as sponsoring countries interest.

The brain drain i.e. reverse transfer of highly qualified manpower to developed country from underdeveloped countries has been seriously viewed. This is because this reverse transfer of HQM further widens the gap between developed and underdeveloped countries. The reverse flow of highly qualified manpower from underdeveloped countries to developed countries have been mainly in three branches i.e. engineering, medical and other professionals. A study conducted by Indian Institute of Applied Manpower Research in 1970 reported that as on 1967 about 25% of the total out turn of engineering degree holders, in 29% of the medical degree holders went abroad. The 5% of the total out turn of nurses in the same year went abroad. About 6% of the total out turn of veterinary scientists as on 1966 were issued passport. This suggests that quite a substantial amount of investment done on the training of medical/engineering graduates went abroad. It may be further said that the most productive years of such graduates were also spent in foreign countries. The magnitude of transfer of resources becomes more serious when it is viewed that such highly qualified manpower from a "critical mass"—which has a leadership quality and brings about change in the respective fields, and it is lost to the other countries.

There are however differences of opinions on the issue of flow of highly qualified manpower from underdeveloped countries to developed countries. There are people who view that since in such countries highly manpower are surplus in supply, there is no harm if some of such persons go abroad. Here it is a question which still remains unanswered (in the absence of data) whether those who went abroad were :

- a) employed
- b) unemployed
- c) had high potentiality of employment

in the home countries? There is another view that the resource transfer through these people from

abroad sometimes compensate for the loss. It is very difficult to accept this proposition also in the absence of data.

It is also often stated that those who go abroad for higher studies they settle down there because of sluggish economic conditions in their home countries which do not offer any better job prospects. As against this there is also a proposition that such people since they receive their basic and higher education from the home country they have some sort of responsibility towards that country; although they may not initially get the comfortable life which a developed country offers. But they have to work in those conditions for the development of home countries. Besides this sluggish economic conditions often it has been alleged that Indian Bureaucratic set up encourages such persons to migrate to other countries because such bureaucratic rigidity are much less in those countries.

On the theoretical plains two types of views have been expressed very frequently. To mention them, they are namely Nationalistic view by Don Patinkin and Internationalist view by Henry G. Johnson. The view expressed by the latter author states that the free flow of highly qualified manpower in international market helps the maximisation of world welfare. As against this the view there is "nationalistic" view by the former author which states that migration of highly qualified manpower which forms a "critical mass" that can bring about a change and exert influence on government decision making and as well as do a good deal of research and development for the under-developed countries is a net loss to the underdeveloped countries.

Many issues are still unsettled. However, a study by UNCTAD had shown that the gains to the developed countries due to highly qualified persons working with them is much more than transfer resources to the underdeveloped countries in terms of aid from these countries. If a miopic view is taken one might feel contend by saying that since India is surplus in highly qualified manpower there is no harm if some of them migrate to other countries. But if a perspective view is taken it may be said that these very people by remaining in the country might bring about some change in society and exert influence on the government decision making and they may as well take the modern technology to the rural areas which in turn might help in the regeneration of rural economy.

In view of many unsettled issues, there is a need of a detailed study which examines the types of persons migrated to other countries, magnitude of net transfer of resources and the other effects on the national economy due to migration of such people or returning of such people to the home country. There is also a need for examining the view of migrants and potential migrants about the brain drain problem.

\*Research Officer, A.I.U.

# A Case of Elite Sportsmen

Amarjit Singh Sohi

The concept of sports participation has been regarded as sports involvement or sports consumption. Sports involvement is not a simple concept as it connotes several dimensions of behaviour pertaining to sports. These dimensions can be considered as motoric, cognitive and attitudinal in nature. Involvement in sports can be understood as primary and secondary (Kenyon 1969 : 78-79). Primary involvement is actual participation on the part of an individual who may do so for excellence (competition and increase in performance), recreation (pastime) and for health (fitness). Kenyon (1969 : 78-79) has described secondary modes of sports consumption which may be direct (Spectators) or indirect (Reading, listening and seeing sports on TV), sports production like arbitrators (officials etc.) and entrepreneurship (sports promoters, manufacturers, coaches etc.). The wider coverage of the concept makes it imperative for empirical research, to operationalize the concept in terms of one of dimensions of sports participation. This limitation of the concept can help to avoid the pitfalls of conceptional confusions.

How does an individual starts involving in sports? Is there any relationship between the individual's social origin and the type of sport which he involves? It has been shown that the choice of sport of involvement is not dependent on purely chance, but an association has been ascertained between a type of sports involvement, sports involved and the social background of the individual. Sports involvement differences with respect to type of sport have been studied on the basis of various social parameters like, sex difference, age, education, occupation, social class, income, sibling position and cultural milieu of a society. Irrespective of these different social parameters, there exists a common phenomenon of socialization which is role learning and role enactment in sports involvement on the part of sports role aspirant. Approaches, diversified in nature dwelling on different academic leans, have been resorted to in studying the process of socialization in general. The popular approach to study the sports role socialization is "Social role—Social system", which has been used by Kenyon and others to study cross-cultural process of socialization in sports involvement.

Sports role socialisation is a dependent valuable and social system which is propensity inducing social milieu, is independent variable. The role aspirant having prerequisites (aptitude), is stimulated by a social system in which he finds himself and its members are important and significant ones to the incumbent. The interaction of the role

aspirant with significant others within the social system leads to the inculcation of propensity for the acquisition and internalization of a sports role. The most important and far influencing social systems are primary groups like, family, peer group and neighbourhood. The institutions like, the school and various organizations also contribute towards the sports role socialization.

Now, it becomes apparent that for sports role socialization certain social prerequisites (social properties in addition to aptitude) are essential and sport role socialization takes place within a social system, inducing propensity for its required degree. This would be illustrated with the help of the case of elite sportsmen of India. It shall also be shown that these sportsmen have got certain social characteristics and further it would be seen that how the primary groups provided a congenial social milieu, directly or indirectly, for their sports role socialization.

For this study, sportsmen of national repute of various sports, who came to the National Institute of Sports, Patiala for coaching camps during 1972-74, were taken as respondents. Out of 125 sportsmen, 96 filled the questionnaires properly. All these sportsmen have been taken as elite sportsmen because they have either represented the country or are the national champions. The distribution of the sportsmen by their sports is given in Table 1. Amongst these elite sportsmen, there were six sportswomen also.

Table 1  
Sportsmen by Their Sports

Sports	No. of Sportsmen	Percentage
Athletics	34	35.4
Basketball	21	21.9
Hockey	20	20.8
Gymnastics	8	8.3
Football	7	7.3
Badminton	6	6.3
Total	96	100

To find the rural/urban background of the sportsmen, they were asked to mention the place of living during their formative years of age i.e. upto 15 years of age. As expected, Table 2 shows that most

of the sportsmen are ruralite. This may look illusive when rural/urban population ratio in India is taken as the base. In this case, the urbanites are over-represented in this group. This, perhaps, apart from other factors, may be due to the fact that sports coaching has got formalized and has come to stay to a greater extent in urban communities. Sports coaching and facilities have not made their way in the rural communities.

**Table 2**

Place of Living of Sportsmen during Their First 15 years of Age

Place	No. of Sportsmen	Percentage
Village	49	51.0
City	45	46.9
Both	2	2.1
Total	96	100

Indian religions as institutions have not provided a convincing influence on the recreative activities, physical in nature of its followers. In Europe and North American countries the Church has a good role in popularising sports though at a lower level. In India, on the other hand, the religions with martial leaning, have inculcated sportive chivalrous attitudes and respect for physical prowess. The religious affiliations of these sportsmen are given in Table 3. Half of the sportsmen are Hindus, one third Sikhs, about 9% Muslims and 8% Christians. The Sikhs and Christians are over-represented when all-India religious affiliations are taken into considerations.

**Table 3**

Sportsmen by Their Religion

Religion	No. of Sportsmen	Percentage
Hindu	48	50.0
Sikh	31	32.3
Muslim	9	9.4
Christian	8	8.3
Total	96	100

Educational attainment of the sportsmen is shown in Table 4. About one third of these sportsmen have studied upto matriculation and half of them have

studied beyond matriculations, but upto B.A. level if masters and post-masters degrees are considered as higher education, it can easily be maintained that these sportsmen are not highly educated. Similarly, their achievements in professional education are almost nil. The technically qualified sportsmen who form a very small chunk of the sample, have undergone minor courses of smaller durations.

**Table 4**

Sportsmen by Their Educational Achievement

Educational Level	No. of Sportsmen	Percentage
Middle	2	2.1
Matriculation	30	31.3
Pre-University	19	19.8
Graduate	28	29.2
M. A.	12	12.5
Technical Education	5	5.2
Total	96	100

Amongst these sportsmen, about two third are following some calling for their livelihood (Table 5). The remaining are still studying in educational institutions. The employed sportsmen are shown distributed in Table 6 according to their monthly salaries. It is to be seen that most of the sportsmen, though they are national heroes, are not earning higher amounts from their callings. This shows that they are not in prestigious and higher positions

**Table 5**

Sportsmen by Employment

	No. of Sportsmen	Percentage
Employed	64	66.7
Unemployed	32	33.3
Total	96	100

Table 6

**Monthly Emoluments Drawn by the Employed Sportsmen**

Emoluments	No. of Sportsmen	As Percentage of the employed
Upto Rs. 200	2	3.1
Rs. 201-300	6	9.4
Rs. 301-400	22	34.4
Rs. 401-500	10	15.6
Rs. 501-600	5	7.8
Rs. 601-700	5	7.8
Rs. 701-800	6	9.4
Rs. 801-900	3	4.7
Rs. 901-1,000	3	4.7
Above Rs. 1,001	2	3.1
Total	64	100

The occupations of the fathers of the sportsmen, which are shown in Table 7, need some clarification. All the fathers who are in employment have been categorised under 'Service' category, those engaged in agricultural pursuits under 'cultivators' and those running some shops etc. under 'business'. The fathers who are in employment, are not holding very high position except two. They are working in officers at very mediocre posts. The fathers, who are cultivators, are not of "landlord" status. Most of them are marginal farmers having a small operational holdings. The fathers, who have been categorised as businessmen, run small shops and petty business. They are not 'business magnets' even in their locality. The above remarks about the father's occupations, can be supported through the analysis of their monthly earning which are shown in Table 8. Like their sons, they also earn a mediocre amount indicating their lower economic status. It is clear that the occupations and income of the fathers of these sportsmen are of low status.

Table 7

**Sportsmen by Their Father's Occupations**

Father's Occupation	No. of Sportsmen	Percentage
Service men	44	45.8
Cultivators	34	35.4
Businessmen	15	15.6
Others	3	3.1
Total	96	100

The social milieu, the sports involvements of the members of the various primary groups have shown in Table 9 (given on next page). Family, "peer groups" (friends) and neighbourhood have been considered. There are about one third sportsmen whose brothers also participate in sports and fathers of 26% sportsmen have

Table 8

**Sportsmen by the Income of Their Father's**

Father's Monthly Income	No. of Sportsmen	Percentage
Upto Rs. 200	2	2.1
Rs. 201-300	20	20.8
Rs. 301-400	12	12.5
Rs. 401-500	20	20.8
Rs. 501-600	12	12.5
Rs. 601-700	5	5.2
Rs. 701-800	5	5.2
Rs. 801-900	6	6.3
Rs. 901-1000	3	3.1
Rs. 1001 (above)	11	11.5
Total	96	100

been active sportsmen. About one fifth of the sportsmen have close relatives who have participated or are participating in some type of sports. Neighbourhood also provides same number of sportsmen. The members of "peer group" show a greater sports involvement and propensity towards sports as compared to the members of the other primary groups.

Motivation, through encouragement and reinforcement, can keep the role learning propensity alive and can enhance it to a higher degree. In addition to a favourable social milieu, these sportsmen have been constantly pushed towards the acquisition and learning of the sports role. The sustained encouragement by the primary have been shown in Table 10.

In order of degree of the role aspirants towards sports role socialization, family stands ahead of "peer group" and neighbourhood.

To sum up, the sportsmen do not belong to higher social class as seen from their position on the social correlates of stratification, like, education, income and occupation. The same is true in the case of their fathers. There is uneven representation of sportsmen as regard to religious affiliations and rural, urban background. These sportsmen have social milieu and inducement provided by the social system (primary groups), which induce them to attain higher degree of sports role socialization.

**Table 9**

Sports Involvement by the Members of Primary groups of Sportsmen.

Primary Group	Persons Involved in sports	No. persons involved in sports	As % of total(96)
Family	Father	25	26.0
	Brother	31	32.3
	Uncle	12	12.5
	Others close relatives	19	19.8
Community	Neighbourhood	29	30.2
	Friends	51	53.1

**Table 10**

Social Facilitation by the Members of Primary Group Extended towards the Sports Involvement on the part of Sportsmen.

Primary Group	Member of the primary group extending social facilitation	No. of sports-men	As % of Total (96)
Family	Father	37	38.5
	Brother	31	32.0
	Uncle	23	24.0
	Other close relatives	15	15.6
Community	Neighbours	33	34.4
	Friends (peer group)	51	53.1

[Courtesy : NIS Journal]

## Crisis Facing Mankind

With the great problems that the world is facing, the coming generation of leaders will require all of the wisdom they can gather to help solve them. This is a critical time in world history, one that is unprecedented. Within the short space of a hundred years, a mere second in the history of mankind, we will have used up the bulk of the fossil fuels the cheap energy on which our recent prosperity has been dependent. Further, the population of the world is expanding rapidly and must level off either through planning or catastrophe. We are faced with a real prospect of an atomic war which would devastate mankind. The gap in prosperity between the developed and developing countries is increasing rather than decreasing. At a time when it is essential for all countries to co-operate to find solutions to the difficult problems, narrow nationalism and self interests are increasing. It is unconscionable that my own country with a population only a third that of India is using a large fraction of the world's irreplaceable resources. Our food production, of which we export a great deal, is dependent to a large extent on imported oil.

By the end of the century, the world's supply of fossil energy will have dwindled substantially and we have nothing satisfactory in sight to replace it. To survive, we will have to change our life styles, to learn how to live satisfying rewarding lives with much less dependence on energy and material goods

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Extracts from the convocation address of Prof. John Bardeen of University of Illinois (USA) delivered at the University of Delhi.

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that we now use. To do this, we can learn a great deal from India and its great sages of the past. Much more than the traditional role of the market will be required to limit our consumption.

This is a human rather than a scientific problem. The changes in life style required will be much more drastic in United States than in India. I hope that India can bypass the mistakes we have made and look toward a society which lives within its available resources. This implies that it should be self reliant in developing its own technology rather than to emulate that of the West. Technology developed elsewhere should be adopted to the country's needs and this means developing expertise in the relevant subjects.

Outwardly, science is proceeding at a rapid rate. There are remarkable new insights in understanding the very complex structure of matter and about the universe in which we live. Molecular biology is

giving a vast amount of information and a basis for understanding of life processes. Rapid advances are taking place in applied sciences : medicine, agriculture, engineering. It thus may appear that pure and applied sciences are doing exceptionally well. But scientists themselves are very concerned about the future.

The rapid advance has come in large part from increased government support of science. The United States has perhaps been a leader in this effort, and it is there that the problems are showing up first. For almost a decade funds for basic research have levelled off or are decreasing. Long term research in industry is also decreasing. There is increasing demand for relevance, near term results, from both industry and government. As a result, the best science may not be adequately supported. Funds go to projects with promise of near term pay off. They often fail because the basic knowledge required to solve the problem is not available. An example in the U. S. is the large programme of the National Institutes of Health to try to find a cure for cancer. At about the time the programme was initiated they dropped their support for organic chemistry which is certainly essential for any progress.

A government must decide on its own priorities, how much should go to the various branches of applied science, such as agriculture and medicine, how much to such basic fields as high energy physics and astrophysics which promise no practical returns but will increase our knowledge of the world in which we live, how much to chemistry, solid state physics, etc. These priorities should be set by the needs of the country and prospects for success. The scientists themselves should be aware of the practical problems requiring solution, most will want to contribute as much as they can to help solve them. But outside of these general priorities, funds within a given field should be allocated to those doing the best science. To see that advances in science are utilised, there should be close interaction all through the chain from basic science, applied research, development, engineering and production. Person to person contacts are much more productive in getting things done than government decree. Such interactions are not easy to achieve; it is something that one must promote by continuous efforts. This may be done in a research institute which covers a large part of the spectrum. Technology transfer from government laboratories or universities to industry is difficult unless the industries themselves have research efforts that overlap those in research institutes or universities.

To create the right environment in which scientists are aware of practical problems to be overcome and engineers in industry are familiar with progress in the relevant scientific areas is difficult but can be done with proper organisation. The most difficult decisions are those that determine priorities for different fields. Demands on energy and other scarce resources should be an important criterion in setting priorities. □

**1. The Management of Examinations: Edited by Amrik Singh, H. S. Singha, AIU, 1976; price: Rs. 35; pages: 258**

The book is a collection of papers by diverse bands, covering a fairly wide range of problems in the area of Indian University Examinations, analysing them systematically and scientifically, and offering solutions and making some constructive proposals. It makes no claims to exhaustiveness in treating this subject of vital significance to our education system. Nevertheless, the components covered include undergraduate examinations in India, the confidential operations required, evaluation procedures, computer and other mechanical aids in examinations, questions banks, statistical innovations, socio-economic aspects of examination, and semester system.

The basic assumption that rightly informs all the papers as stated in the preface is: 'planning improvements in the present framework itself.' No system, with its basic structure, can easily be thrown overboard, nor is there a need for it if the area of examinations in India, are perhaps, entire education.

Some of the problems have already become dated or have assumed a new dimension. The problems of the appointment of paper-setters and examiners, touched upon in certain papers, the remunerations to be paid to them and the proportion of internal and external examiners, have undergone a considerable change with the responsibility of examining their own students as a part of the teachers' duty, at most of the universities. Moreover, a large number of universities already have trained Controllers of Examinations and even examination reform cells.

Some interesting, though obvious, suggestions are the 'need to have a post-mortem of examination results', 'research in examinations', and 'computerization of

examination work' to meet the numbers (SINGHA, P.35)

The potential of the computer for 'test' construction, 'analysis, design and data processing of examinations', in the context of 'what can be done immediately with the available computer facilities in our country' (P. 76), has been worked out systematically by V. Natarajan. The usefulness of the computer in question banking, with the support of the results of experiments made in India and abroad, has been effectively brought out. The advantages accruing in terms of cost reduction, or at least the cost being competitive with that of traditional methods, have been highlighted.

Natarajan has also thrown a suggestion of the meaningfulness and usefulness of the computer 'in the prevention of student absences during the taking of tests' (p. 82). Taking stock of all the benefits of the computer, he has made a forceful plea for a 'National Centre for Computer Aided Test Construction,' under UGC/AIU.

V. M. Dandekar's proposal on the system of evaluating results in examinations, already adopted to a certain extent by Gauhati University, makes an interesting reading in the context of the importance to be attached to numerical marks, their conversion to grades and grade point average. A. Edwin Harper Jr. has offered a comprehensive and valid method for adjusting internal assessment to an external standard. The method, involving rank-ordering and scaling, called Rank Order Scaling (mentioned by Amrik Singh also, in 1973) commends itself for its internal conviction as well as its operational simplicity, cost control, and realism.

Some of suggestions made elsewhere, e.g., substitution of the grading system for numerical marks and the need for the introduction of the internal assessment, are already living realities at a number of universities.

Despite certain repetitions and obsolescence of some of the problems, the book can be recommended to all those interested in

the subject for some very constructive and meaningful proposals.

Lastly, a lot of effort seems to have gone into the preparation of a comprehensive Bibliography.

**2. Monograph on Question Banking for Universities, AIU, 1976, Price:Rs. 5/-, Pages: 93**

The Monograph is a simple, lucid, fairly comprehensive account of the theory, background, usefulness, practicability, and typology of Question Banking. The concept of Question Banks, as implemented at some of the universities, seems to have been completely misunderstood and that by itself justifies the need and desirability of the Monograph.

The first section gives a brief and succinct treatment of the problems and areas dealt with and elaborated later on. Apart from introducing the subject, it serves to generate interest and provide motivation to continue further. The utility of Question Banks in the comparability and maintenance at different levels, with 'a wide national significance' (p. 18), finds a mention here. The rest of the book bears ample testimony to it.

The second section lists briefly some of the outcomes of Question Banks.

The third section deals with the different levels and form of Question Banks, ranging from an individual teacher's collection to the University' collection of items/question from Question Banking Workshops for teachers, item writers, and past examination papers, to be stored on 8" x 5" cards in Kardex trays at the Controller's office and printed as a book for use elsewhere. Card sample has been provided.

The fourth section gives the plan of action to build Question Banks, evolved by the Research Cell of the AIU as a part of its Development. The projects undertaken in some of the subjects as the first degree level have already

(Contd. on page 183)

## Plea for Democratization of Higher Education

Dr. S. Chandrasekhar, Vice-Chancellor of Annamalai University, addressed the 14th annual convocation of Punjabi University, Patiala this year. He strongly pleaded for the democratization of higher education in India. The educational system, he said, should assure equality of opportunities to the varied culture, social and economic segments of our society. The democratization of educational opportunities should influence the stratified hierarchical caste system and change the general society into a more democratic and egalitarian one. These two factors are inter-linked and produce in a long run a democratic society with natural and spontaneous democratic opportunities in education at all levels for all classes of people. But the question is how to democratize education in general and higher education in particular. Several objections have been raised in this connection. The excuse of

The second objection is more basic and fundamental. How can we give equal opportunities to all our youngsters of both sexes of all castes and social groups when there is no such equality in the social, economic or cultural life of the community and country at large. Our society has been saddled through the centuries with a tragic stratified social order. The result is that in the country education became the exclusive concern and monopoly of a very few minority, roughly less than 5% of the nation's population. This was bad enough, but on this was imposed an alien system of education. It was not merely an alien system but an equally undemocratic system of education. When Great Britain introduced western education in India, she herself believed in and practised a system of education only for the children gifted and otherwise, of the elite and left the common people largely illiterate

inverted pyramid resting on a thin unstable apex.

There are others who argue that how can one plead for democratization particularly at the time when we badly need excellence. How can we reconcile the desire for equalitarianism on the one hand, with the demand for highest achievement on the other. This is the crux of the problem.

To those who ask how can we reconcile the need for excellence and highest intellectual achievements with the notion of widest possible admissions to our schools and colleges, the answer is very simple. We cannot really achieve excellence unless we give the widest possible, near universal opportunities to youngsters in all spheres of life to obtain an education. If we explore the potentialities of many, we may discover exceptional gifts in a few. If we admit only a few we greatly limit the chances of finding the gifted. In a word, unless we educate many, many people, we may not be able to discover some who are excellent.

Our educational problem no doubt are formidable by their sheer size but this need not deter us because other countries, which are now advanced and in the vanguard of achieving excellence in higher education were in a similar plight only half a century ago. We have their experience and knowledge, their record of errors and trials and we can profit by these as we adapt their experience to our needs, for the successful lessons of human experience are not the monopoly of any one national community.

The United States of America has perhaps the world's oldest system of compulsory universal primary education. They also have a rich and variegated compulsory system of high school education. In the United Kingdom and other older European countries, college and university education was the privilege of a small intellectuals and financially affluent minority. America was the first nation to

## Convocations

financial constraints is always readily available for not doing something. Material poverty apparently begets a kind of mental poverty which finds in comforting not to attempt to do anything. The answer is very simple. We need to change priorities and both the Governments and the people should resolve that our people should not be left to grope in illiteracy and unlettered darkness and then we shall be able to give it a top priority and find the means for trained teachers, buildings, libraries and laboratories. In Venkateswara University the gold and silver of the temple has been endowed by the people to finance our educational institutions. This could be attempted elsewhere.

and certainly not college-educated. Thus Britain's imposition of a British class system of education on an undemocratic Hindu caste system of education, all but destroyed India's chances of democratizing her educational system. This was a double denial of democratic values in our educational system which has led to two evils. First the denial of knowledge and its very access to a large number of people resulted in a majority remaining steeped in ignorance, poverty and superstition. This had and continues to have its undesirable impact on the rest of the society. Secondly the denial of knowledge and its fruits to a vast majority of our people through the ages has led to Indian society becoming an

make higher education a basic democratic right—open to all men and women who have the minimum academic qualification to enter a university. This right is independent of age, sex, ethnic identity, religion, national origin, financial ability or family background. And yet the United States has produced excellence in many areas of human endeavour, disproportionately large for a relatively small population of only 220 million.

The question often posed here is how can the US treat higher education as a democratic right within the access of all average students and yet produce excellence enough to win half the nobel prizes every year since the termination of the second world war and all the nobel prizes this year. The answer is very simple because she permits a large majority to receive the benefits of higher education, she is able to throw up enough brilliant men and women to achieve excellence by any acceptable international standard.

Should there be a conflict between democratization of higher education on the one hand and the pursuit of excellence on the other? The number of young people and their ratio to the total nation's population entering college or university is higher in the United States than anywhere else in the world. In the State of California, for example, for the first time in history, more than half the young people in the 18-21 age group go to college. As against the British and the European concept of higher education only for a small intellectual or social elite, the United States of America has strengthened the basis of its high schools and democratized the entry of young people to their colleges and universities. Contrary to those who cried that democratization and admission of all high school graduates who desired to enter colleges would lead to a striking and tragic fall in standards in intellectual performance of university young men and

women, today in the U. S. vast and well run campuses, large and up-to-date libraries, modern and well appointed laboratories and research centres.

The education experience of USA has been cited because it has been judged by internationally recognised criteria in the midst of the widest possible democratic admissions to their colleges and universities. Some might object that we should not emulate the accomplishments and objectives of such industrially and technologically advanced and affluent countries as Japan, the USA and the Soviet Union. There is no point in comparing ourselves with other under-developed and developing countries because we must set our sights high and the sky should be the limit. If our ambitions and hopes are limited, our achievements are bound to be mediocre. The experience of this one country tells us that in the long run we can achieve both the widest democratic base of admissions to schools and colleges and at the same time achieve excellence, once we adapt their experience to suit our particular needs. We have to shed our prejudice against the 'depressed' castes and tribes, the economically poor, the underprivileged and the dispossessed. Performance without any prop roots of whose son or daughter you are, should determine one's status in society. We do not want traditional aristocracy based on birth and hereditary privilege. We want modern meritocracy based on performance and achievement. The problem before the country is the reconciliation of the claims of ability and merit on the one hand and the needs of social justice on the other. It is easy for any society to choose its ablest and entrust them with tasks of responsibility in administering institutions or governing the nation. Today the one silent social revolution that our country needs is the democratization of educational opportunity for all our young people.

## Challenges of agricultural education

The achievement of progressive agriculture is a highly complex operation. We talk of more advanced farm technology these days and are too often satisfied with the magic words 'green revolution'. But many conscious and deliberate policies backed by effective programmes are required to achieve the goal. These acts are interrelated and inter-active one with another and must be carried out simultaneously. Research may provide a high yielding variety—the first step in giving a new technology to farmers. But then we discover that we have to invest in fertilizer, in water, in plant protection materials and methods and in power for irrigation. We discover also that we need an efficient extension system, a complete credit system and price policy which assures a return to farmers without making the urban masses even poorer. Having attended to these matters and with the help of the Almighty we get a good crop. We adopt our institutions to meet the special needs of the small holder and even to take steps in agrarian reform like land consolidation, steps which take time and money. In short the price of success in meeting the malthusian challenge is eternal vigilance in the form of continuing attention to the farmers' needs. It is one thing to devise a strategy. It is quite another to translate strategy into the complex programme in which every part is dependent on every other part for success. We can talk about raising production of foodgrains by four per cent per annum but no result will follow unless we organise the nation's scarce resources for this purpose.

Universities enjoy certain privileges for which they should be held accountable in a special and public way. Their tasks may not be available for inspection of the Auditor-General but the impact of their work have to be scrutinised publicly. On the relevance of universities the ivory towers in a

university may be mentioned. We need our great poets, philosophers and scientists. They may not tell us how best to develop the tube wells but they do remind us of our hopes, reveal nature's secrets and remind us of the infinite possibilities open to man. Not too many of us are Tagores or Einsteins but our life would be immensely poorer without them. A model can be relevant but too many articles and even books are merely mathematically elegant forms of doodling, offering no help to the hard pressed policy maker working for ways and means of ensuring that two blades of grass bearing wheat will grow where one grew before. It is in this area that a university can really be helpful.

The first duty of a university is to provide good teaching. Knowledge has to be imparted as well as vocational skills. Good teaching will arouse interest and train the mind to think analytically as well as become well informed. The interests shown by students will be the greater the more closely the subject matter of their courses relates to the world about them—both their own country and the wider problems of man on this globe.

Despite the fact that equipment is often deficient, universities have a duty to do what research they can. This is the process of adding knowledge and clearly this can be directed to real problems—with great gain to the people among whom the university works. James Perkins, the leading American University President, said 'universities are the dynamics of change as well as transmitters of custom'. Research and ideas are the mainsprings from which must come the modern agricultural technology for India and policies to go with it which are the need of India. One of the major functions of the agricultural universities is to provide the needful research support for agricultural development within the State. This needs to be nurtured further and a good graduate level enrolment is a great help to this end.

The argument that applied research is not intellectually demanding is totally irrelevant. Even if breeding new varieties of rice is not itself basic science but rather a technological application of genetics, the problems of discovering in the field under what conditions a given variety does best is an intellectually challenging problem. The fact that one variety does well in one district and not in another, has to be completely solved if all farmers are to share in the green revolution. The differences in conditions have to be defined and the attempts made to breed appropriate varieties for each set of conditions.

There is a danger in the way academic disciplines have been organised. They can be too compartmentalised—A Department of Chemistry or Agronomy, Entomology, Agricultural Economics. All are significant but how often do they combine their efforts to solve a problem. Nevertheless it has a sad answer atleast in many universities outside India. Good extension these days demands an understanding of the farm as a whole and its operation over a whole year. Agronomists, Economists, Water Management Specialists have to work together because, finally, farming is a system in which all specialities are fused.

The problem of seeing things both separately and collectively in a system calls for interdepartmental collaboration in research, a point clearly made by Dr. Sethna. It can also be used as a teaching device. If the continuing seminar is conducted in the field amongst the farmers as well as the classroom it is bound to be helpful. Think of the challenge in a seminar on 'How to raise productivity on small farms.' There is not one discipline in the university—whether in natural or social science or the humanities—they could not usefully be involved. And, if to add further realism, the representatives of credit institutions, input supplying agencies and marketing boards or farms, could sometimes attend, the

challenges and excitement of finding the best answer to the question would be very great.

(Extracts from the convocation address delivered by Sir John Greenfell Crawford, Chancellor of Australian National University, at the Orissa University of Agriculture and Technology)

(Contd. from Page 180)

been completed or are in the process of being completed.

The fifth section, a brief one, suggests the method of storing items/questions, suggesting the computerized system at the highest level of sophistication.

After stating the method of using Question Banks, for purposes of test construction, ranging from class tests to university examinations (section VI), some extremely useful and simple procedures for Pre and Post Validation of Items/Question have been suggested (section VII). The Pre-Validation procedures, offering a check list of criteria, were already mentioned in a more elaborate and illustrated form in 'Towards Better Questions' (AIU). However, the much needed repetition here serves to provide cohesion and continuum to this Monograph.

Some simple statistical procedures for Post-Validation have been proposed, with a handy chart of Facility Value and Discrimination Index of a 20 Items Test of 20 minutes carrying 20 marks, and a 10 Question Test, of 1 hour carrying 50 marks, administered to a class of 44 students.

This step by step review of this Monograph should be able to bring out the kind of awareness and understanding of the system of Question Banking. There is sufficient evidence to predict its success 'over a certain period of time' (section VIII-p.89).

—Satya Pal Jukka  
Zakir Hussain College, Delhi.

## Agricultural universities convention held at Coimbatore

The eighth annual convention of the Indian Agricultural Universities Association was held at the Tamil Nadu Agricultural University, Coimbatore recently. Dr. O. P. Gautam, Deputy Director-General, Indian Council of Agricultural Research, New Delhi, inaugurated the convention and Dr. G. Rangaswami, President of the Association and Vice-Chancellor of Tamil Nadu Agricultural University presided over the function. Eighty delegates from twenty two agricultural universities and Indian Agricultural Research Institute attended the convention. A special session was devoted to the role of agricultural universities in integrated rural development. Three separate sessions on self-improvement of agricultural universities, new courses and curricula in agricultural university and fundamental research in agricultural universities were held.



Delegates at the eighth annual Convention of Indian Agricultural Universities Association held at Coimbatore

The convention felt that there was a need of continuous evaluation of agricultural universities and each university should preferably establish a cell to accomplish this job. The State Governments should be requested to make

adequate provision for the proper development of universities. It was recommended that ten or twenty per cent of the provision for agriculture should be set apart for the development of agricultural universities in addition to the maintenance grant provided in the State budget to meet the normal commitments.

There was an urgent need for the training of administrators of the universities and the supporting staff in management. It was felt that the technical degrees awarded by the agricultural universities will also need adjustments in curricula both as regards the subject matter content and duration of the various degrees under the  $10+2+3$  system of education. There was a general consensus that duration for various degrees imparted in the agricultural universities should be of four years after  $10+2$  except in the case of agricultural engineering and veterinary and animal sciences which will be five years duration. The internship, apprenticeship, practical training

prepared by the various States so that admissions could be linked with employment potentialities.

Keeping in view the rapid advance in technology and the changed requirement under rapidly changing socio-economic conditions, the need for adding new course like farm forestry, agricultural meteorology, agricultural marketing and cooperation, human nutrition, rural credit, population education, etc. was very keenly felt. It was necessary to make such courses as part of the curricula for various degrees. The Indian Council of Agricultural Research should be apprised of this problem and may be requested to ask the different panels to take this into consideration while suggesting model curricula and outline of courses for various programmes.

Considering the huge manpower requirements of school teachers for vocationalisation of education in agriculture, agromechanics and home science, the agricultural universities should undertake a responsibility to train such teachers. It would be desirable to start a BEd degree in agricultural universities where the right resources or subject matter specialists are available. The award of the second degree would offer an incentive for the students to opt for the teaching profession.

It was felt that time has come when fundamental research has to be given due attention in agricultural universities in the larger interests of agricultural production. But it should be done with out hurting applied research which is of primary concern to the agricultural production programme of the country. General universities and the national institutions of the Council of Scientific and Industrial Research and other agencies should be involved in collaborative research programmes with the object of full utilisation of all resources in terms of manpower, money, equipment in those departments where agricultural universities are sufficiently strong.

and/or earn while you learn should be included in the duration given above.

To meet the unemployment of the agricultural graduates it was recommended that sources and manpower inventories be

## Rural varsity inaugurated

The first village university in the country was inaugurated by Smt. Indira Gandhi, former Prime Minister of India at Gandhigram by lightening a silver lamp, unveiling the university's crest and by planting a seedling to mark the occasion. Gandhigram is situated at the foot of Sirumalai hills. It had a humble beginning thirty years ago when it started as medical centre and basic teaching training centre with twenty-five village children. It was given the status of a deemed university only recently by the University Grants Commission.

Speaking on this occasion Mrs. Gandhi said that science had to be taken to the villages and the villagers taken to science. It had been her endeavour to persuade scientists and engineers to use local materials, talent and methods so that men as well as materials were fully utilised. In the beginning the idea of science being taken to village was not accepted but she was glad to find

who could place learning at the disposal of the community at large that could be called learned. These postulates were fully satisfied by this new university. The Vice-Chancellor, Shri G. Ramachandran said that the university was looking forward to the time when every institution in the Gandhigram might come under a chartered university like that of Visva Bharati at Santiniketan. Mr. A. M. Thomas, Chairman of All-India Khadi and Village Industries Commission while opening the exhibition organised on this occasion said that the Commission would adopt this university as an institution for high level training of its technical scientific and managerial staff and they propose to refer to this university some of their research problems.

### JNTU study pattern spreading

While addressing the Institute of Engineers, Andhra Pradesh on 'technological education', Mr. M. V. Rajagopal, Vice-Chancellor, Jawaharlal Nehru Technological

cept of continuous technical education for even postgraduates were acclaimed throughout the country and in fact many other States were emulating it.

He said that technological education should be continuous process and even the employed should be brought back to the university to let them have training and practical knowledge of latest development in science and technology. The external evaluation was out dated and preferred five-year duration for engineering courses. The sandwich courses should also be very necessary and useful. Technical education in India should not merely aim at the academic excellence but also be kept in view of the industrial reforms and the socio-economic needs of the country and try to meet them.

Mr. J. A. Murray, Chief Engineer and Chairman of the Andhra Pradesh Institute of Engineers, proposed a vote of thanks and stated that the Govt. of India had spent over Rs 102 crores on technical education in the Fourth Plan. The proposed expenditure for the Fifth Plan was Rs. 164 crores while the annual turn out of engineering graduates was about 15,000. The engineering achievements in India were unique and the technical manpower had kept pace with the demand on it.

## Master Plan for NEHU campus

that gradually it was creeping in and people have begun accepting it since it had been realised that resources in this field were unlimited. They are limited only if we do not use them but are something with which we can cooperate without destroying the future. She described Gandhigram as an old institution that was taking a new form. It was based on ideals of Gandhiji—to work amongst the people of rural areas. Dr. P. B. Gajendragadkar, Chancellor of the university in his address laid down three postulates : learning which made citizens out of students of good character and good conduct; learning which liberated the mind of students from narrowness, bitterness, borne out of religion, caste, community or creed; and it was only the man

University, Hyderabad, said that till 1949 the advancement of technological education in the country had been halting and without a perspective. But up to 1970 it made remarkable progress. The dull uniformity both in academic and administrative set up however continued. The starting of the technological university was unique from many points of view. The multi-faculty university with dynamic outlook had introduced internal evaluation system which was most satisfying as borne by the fact that a recent rating by Union Public Service Commission had placed JNTU in the first place in its selection. The University syllabus, its concept of autonomy for the constituent colleges, industrial consultancy service activities analysis cell and a con-

Director, School of Planning and Architecture, New Delhi. The members of the jury along with the Vice-Chancellor, Dr. C.D.S. Devanesen, have finalised the plan out of the seven designs coming from reputed concerns all over the country.

The master plan has provided four phases of the entire complex besides keeping future extension provisions. The four phases will include staff and students housing complex, academic complex, sports complex and restructuring of the existing landscape with provisions for deer park, bird sanctuary and botanical garden.

The entire complex has been designed to be integrated with cluster of two-three storey buildings coming around a pedestrian contact spine. The houses are oriented southwest and northeast so as to give maximum benefit of sun light. The total building complex has been physically integrated with the contours of the ground so as to be in harmony with the mountainscape. About ten thousand population could be accommodated in the complex when it is completed.

#### **Jodhpur adopts Nandara Kallan village**

The University of Jodhpur has developed a plan of integrated rural development for the neighbouring village Nandara Kallan, about 10 km from its campus after conducting various engineering and socio-economic surveys. The village has a Govt. Middle School. There are about 173 students and 8 teachers. It has its own panchayat headquarters covering six adjoining villages in the panchayat. The soil is mixed in nature having different proportions of sand, loam and clay at different places. But on the whole it is fertile. The approximate population of the village is around 1700. Out of this about 200 persons belong to scheduled tribes. The village population as a whole is poor and belongs to weak strata of the society. The social

pattern of the village is based on joint family system. A wage earner has on an average four to five persons to support. The main occupation of the villagers is sawan cultivation. The cultivators have their own land but they have to seek jobs in the city of Jodhpur during the season. The main crops are Bajra, Gawar, Moth, Til, Moong and Jawar.

It was realised that no development programme could be implemented effectively unless the villagers were properly educated. So in the first instance an adult literacy centre and a centre to educate the women was set up by the university. These Centres are run by the NSS unit of the Faculty of Engineering. A detailed survey of the village was conducted with the help of students and members of the staff and a plan for the construction of cluster of twenty houses has been prepared by the university. The villagers have agreed to transfer the land to the University of Jodhpur and the plan has been approved by the National Buildings Organisation. The construction of houses is to be started soon as soon as the funds are made available by the NBO. In the meanwhile villagers of Nandara Kallan have constructed additional building by 'shramdan' for the village middle school. The university is now helping them in getting the doors and windows fitted in their buildings. The approach road to the crossing of the bed of Jojari river flowing nearby has been constructed through the efforts of the NSS unit of the faculty of engineering of the university. It is proposed to construct a cause way on this non-perennial river. The work would be done through 'shramdan' by villagers and the NSS cadets of the unit. An underground water reservoir is also being planned for storing drinking water for the inhabitants. To infuse confidence in the villagers, the faculty and the officers of the university pay them regular visits. The Vice-Chancellor, Prof. S.C. Goyal, has himself paid several visits and held discussions with

the villagers. They are being taught to adopt a scientific outlook and shun superstitions and orthodoxy. They are now determined to work hard on the transfer of technology programme organised by the university.

#### **Review of educational financing**

The committee appointed by Tamil Nadu Government to review the financing of education has revealed that 20% of expenditure on education in the State budget could be easily avoided. It has suggested that the money saved by cutting down expenditure on infructuous expenditure can be utilised for certain social reforms.

One of the areas where economy can be effected is teacher recruitments and here the committee has called for a more rational and restrained policy based on a effective application of teacher-pupil norms. The committee has suggested new programmes for meeting the future growth needs. These include continuous in-service training of teachers, improving the school environments, non-formal education for drop-outs and functional literacy schemes, work experience in schools, vocationalisation of the higher secondary course, taking over the scholarship programme for the poor from the Union Government and operating a small-scale talent and merit scholarship scheme. These reforms required two essential pre-conditions. The performance budget for education must become more of a central instrument that it is at present and it should be drawn up after a detailed review of every plan and non-plan scheme.

The committee has expressed its concern over the declining share of local bodies on primary education and heavy subsidisation by the State Government. It has suggested that the State Govt. share must be reduced and the local bodies be allowed to levy an additional surcharge to meet the expenses. A per capita ceiling on expenditure should be established for the whole State.

## **Trade unionists to benefit for correspondence courses**

A correspondence course in trade union organisation and administration in Tamil would be organised by the Regional Directorate of Workers, Madras for the first time to cover the entire State. The course would be spread over six months and about hundred to hundred fifty active trade union workers will be enrolled for each batch. The course will consist of ten lessons. The Directorate have also introduced a course for taxi and auto-rickshaw drivers in Madras to inculcate safety consciousness and courtesy towards the public. These programmes would be organised with the collaboration of the Deputy Traffic Commissioner of Police.

Apart from these courses, the Madras Directorate plans to conduct three-day camps for rural workers districtwise, worker-teachers get together, and refresher courses, community development in collaboration with the State Council of Educational Research and Training and National Integration Commission for bus transport workers. The Directorate has since its inauguration in 1960 trained over 1,833 worker-teachers. Besides, 83,400 workers have been trained at the plant level by the worker-teachers. Fifty trade unions in Madras region have availed themselves of the grant-in-aid given by the Central Board of Workers Education to impart training to the members to supplement the activities of the Board. There is also a scheme to help the union to set up their own library on labour matters for giving grants.

## **Science for common man**

Prof S. Bhagavantam, President, Committee on Science & Technology in Developing Countries, while speaking in a three-day Seminar on technical information services for developing countries held in the IIT, Madras stressed the need to take

immediate steps to bridge the gap between science as it is practised now and the low standard of human life in developing countries. He said that like democracy, development of science and technology had to be by the people, for the people and of the people. Then only it would make a lasting impression. He pointed out that it was a common feature in many developing countries that amidst poverty and ignorance they had advanced scientific institutions. This was totally illogical and something unstable. He said that there was a general feeling that working scientists and educated people in developing countries were getting alienated from rural surroundings, and the problems of the country. It was also felt that urgent steps should be taken to link education in the disciplines of science with national objectives and rules. Methods of information dissemination had to be changed to suit the national tasks and requirements.

## **Symposium on Venoms and Toxins**

An international symposium on 'venoms and toxins' was organised recently at the Haffkine Institute, Bombay. About thirty delegates from India and abroad participated. Prof T. K. Tope, Vice-Chancellor of Bombay University while inaugurating the symposium said that research in social sciences in developed countries was totally different. In basic sciences this was not so and the research here was of universal value. He said that the University of Bombay would soon introduce a course in tropical medicine.

Lt. Gen. R. S. Hoon, Director-General, Armed Forces Medical Services, in his keynote address said that India alone accounted for half of the total thirty to forty thousand deaths annually from snake bite. He said that the total number of people suffering from snake bite globally was one million a year. About forty thousand died and of this half the number was from India. This was

in spite of the fact that hardly five per cent of the snakes were venomous. There were about three hundred poisonos snakes all over the world and out of them fiftytwo were in India. During the last two decades the identification of components of snake venoms, their structural mode of action and biological effects have been subjected to intensive research. The science of biological uses of venoms though still embryonic, has a vast future for alleviating human suffering.

## **Ghana commonwealth education conference**

The seventh commonwealth education conference is being held in Accra (Ghana). The conference takes place every three years; the first one was held at Oxford in 1959. The Accra meeting has been arranged by the Commonwealth Secretariat in association with the Ghana Government. The theme of the conference is 'the economics of education'. It will consider proposals for the establishment of a regional association of polytechnic directors in Africa and a commonwealth staff college to train teachers for technical training institutions. The delegates are expected to pay special attention to science and technical education and will be looking at measures to encourage local production of low-cost teaching equipment. The first part of the Accra meeting will be devoted to discussions among senior officials who will be examining commonwealth schemes of cooperation such as the commonwealth scholarship and fellowship plan and activities undertaken by the commonwealth secretariat.

## **Medical Council recognition for three colleges**

The Medical Council recently accorded temporary recognition to the University College of Medical Sciences (Delhi), Maharani Laxmibai Medical College (Jhansi) and North Bengal University Medical College (Sushrutanagar, West Bengal). The

recognition of Delhi University and Medical College has removed the anomaly created by recognition of the MBBS degree of the university without having been granted recognition to the college. This will now remove the difficulties faced by the graduates of the college, the students passing out from the college could not get the Commission in Army Medical Corps and for post-graduate studies elsewhere. Permanent recognition however would be given to the college only when the deficiencies pointed out by the Medical Council have been rectified.

The Delhi University Medical College will ultimately be shifted to the new hostel complex in Shahdara. A series of meeting with the Delhi Administration, DDA and the Ministry of Health have been arranged for the allotment of proper site adjacent to the mental hospital. The university proposes to build a 500-bed hospital which would provide the much needed medical care to the people of the trans-jamuna area.

### Changes in Madurai

Mr. S. V. Chittibabu, Vice-Chancellor of Madurai University has suggested certain amendments to Tamil Nadu Government for changing the university statutes so that good colleges may become autonomous. The university has constituted a committee to consider this question and will soon visit the American College, Fatima College, Lady Doak College, Madura College and Parasakti College. Another committee consisting of faculty members, chairmen of different Boards of Studies and members of the Syndicate has been set up to consider the question of introduction of new pattern of education. The committee would suggest various steps to restructure the courses in the university.

It has also been decided to start from the coming academic year diploma courses in Population Study, Applied Economics, Applied Psychology, Guidance and Counselling, Politics and

Public Administration and Archaeology. Beside these diploma courses the university would also start rural biased courses at the ancillary level. The University Grants Commission is expected to provide the necessary financial assistance. The university also proposes to establish a Department of Fine Arts which would organise degree course in Dramatics and a certificate course in Bharata Natyam. The Vice-Chancellor has recently urged the State Government to modify the pattern of grants-in-aid and upgrade it so that the management of aided colleges could overcome their financial difficulties.

### Swedish aid for AIIMS

The All-India Institute of Medical Sciences will receive equipment worth Rs. 1.56 crores for enhancing its health activities from the Swedish International Development Agency. The equipment under this grant will strengthen diagnostic services and treatment facilities of the AIIMS hospital. It will also provide support to a large number of departments and will help in reducing the long waiting lines for diagnostic investigations.

The equipment received for the Bio-Statistics department has now made the institute self-sufficient in statistical analyses, a vital component of both patient care and research activities.

### INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

P. O. I. I. T., POWAI, BOMBAY-400076

Advertisement No. 873/77

Applications are invited for faculty positions in the following *Interdisciplinary areas and also in the Civil Engineering and Computer Centre of the Institute.*

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Scale of pay : Rs. 1500-60-1800-100-2000-125-2-2500.

Qualifications and Experience :

Good Master's degree/Doctorate degree in the appropriate field with minimum 10 years distinguished experience in teaching/research in an Institution of University standard or Industry. Specialised knowledge, in one or more specified fields. Professional/Scientific work of outstanding merit and experience in guiding research desirable.

(2) Assistant Professor

Scale of pay : Rs. 1200-50-1300-60-1900.

Qualifications and experience :

Good Master's degree/Doctorate degree in the appropriate field. Minimum 5 years experience in teaching/research in an Institution of a University standard or Industry. Specialised knowledge, in one or more specified fields. Experience of carrying out independent research and guiding research desirable.

(3) Lecturer

Scale of pay : Rs. 700-40-1100-50-1600.

Qualifications and Experience :

Good Master's degree in the appropriate field with not less than 2 years Research or Industrial experience. Doctorate degree desirable.

### ENVIRONMENTAL SCIENCE AND ENGINEERING

(A) Positions available : Professor, Assistant Professor and Lecturer

## **FIELD OF SPECIALISATION**

Master's/Doctorate degree in Civil Engineering with specialisation in Environmental Engineering with reference to one or more of the following :

- (a) Air Pollution
- (b) Water Pollution
- (c) Water Supply Systems, and
- (d) Engineering Systems of Waste Disposal.

(B) Positions available : Assistant Professor and Lecturer

## **FIELD OF SPECIALISATION**

- (a) Doctorate degree with specialisation in Bio-chemistry with research experience in the field of proteins and enzymes, food nutrients/metabolic reactions as related to Environmental Science.
- (b) Doctorate degree with specialisation in Microbiology with research experience in the field of Pathogenicity/virology Bacteriology/Mycology/Biological Waste Treatment.
- (c) At least Master's degree in Chemical Engineering with special knowledge of industrial effluents/biochemical engineering.

## **CIVIL ENGINEERING DEPARTMENT**

Positions available : Assistant Professor and Lecturer

## **FIELD OF SPECIALISATION**

- (i) Transportation Engineering—(Traffic Engg./Highway Engg.)
- (ii) Offshore Engineering—(Structural Dynamics/Wave Dynamics related to offshore structures)
- (iii) Geotechnical Engineering including Soil Dynamics
- (iv) Hydraulic Engineering (Water Resources/Stochastic Hydrology)

(v) Airphoto Interpretation.

## **COMPUTER CENTRE**

Positions available : Professor, Assistant Professor and Lecturer

## **FIELDS OF SPECIALISATION** in one or more of the following

- (i) Programming Language Theory, (ii) Design and Analysis of Computing Systems, (iii) Theory of Computation
- (iv) Advanced Computer Applications :  
(Artificial Intelligence, Information Retrieval, Digital Signal Processing, Simulation and Modelling, Operations Research and Management Systems).

The posts are permanent and carry allowances such as DA, C. C. A., H. R. A. as per rules of the Institute which at present correspond to those admissible to Central Government Employees stationed at Bombay. The Institute has two retirement schemes viz. Contributory Provident Fund-cum-Gratuity or General Provident Fund cum-Pension-cum-Gratuity. Age of retirement is 60 years. Candidates called for interview will be paid second class rail fare from the place of their residence to Bombay and back by the shortest route. Applications should be made on the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed envelope of 25 cm x 10 cm size. Indian candidates abroad may apply on plain paper (in duplicate). Candidates employed in Government/Semi-Government Organisations or educational Institutions should apply through proper channel. Completed applications should reach the Registrar, I. I. T., P. O. IIT, Powai, Bombay-400076 by **20-4-1977**.

## **India to participate in monsoon experiments**

Dr. A. Ramachandran, Secretary in the Department of Science and Technology, inaugurated a six-day international symposium on monsoon in Delhi. The symposium has been sponsored by the American meteorological societies, the Indian Institute of Tropical Meteorology and the Indian Meteorological Department. Dr Ramachandran said that preparation of comprehensive date base was necessary for predicting monsoons and hoped that Monsoon-77 experiment and the Monex-79 project would help to build up this base. Monsoon was not only important in India but also in several countries in Southeast Asia. In this context the international monsoon experiments to begin this year and to be repeated in 1979 are ventures in which all countries are equal partners. He said that a single experiment would not answer all questions relating to monsoons and several such projects would be necessary before one could predict the monsoon behaviour.

The Monsoon-77 experiment would begin in June with participation of ships and aircraft belonging to India and the Soviet Union. Several countries would participate in the Monex-79. The Monsoon-77 experiment would cost the country over Rs. 200 million. Dr. Y. P. Rao, Director-General of IMD welcomed the participants which included leading meteorologists of India and sixtyfive delegates from seventeen foreign countries.

## **Hari Om Awards in Surgery**

The Hari Om Ashram has donated Rs. two lakhs to the Association of Surgeons, Madras towards yearly awards for outstanding work in the field of surgery. The 1976 award has been given to Dr. Atam Prakash of New Delhi and Dr. (Mrs) Mathangi Rainakrishnan of Madras. The 1975 award was given to Dr. (Mrs) Saroj Gupta of Banaras and Dr. Subir Kumar Chatterji of Calcutta.

## Pantnagar's effort to find substitute for wheat

The Kisan Mela of the G. B. Pant University of Agriculture and Technology, was attended this year by a large number of farmers from all over the country. Mr. P. P. Pande, the Vice-Chancellor of the university, said that the mela is being organised twice a year at the end of the Kharif and Rabi crop seasons to bring the farmers of the country face to face with the new varieties of rabi crops, improved breeds of cattle and poultry and new varieties of vegetables and fruits. A question and answer session is held to remove the doubts of the farmers. They are advised on their agricultural problems by the university staff so that the new technology could be applied by the farmers under new field conditions. The farmers could also take with them Pantnagar seeds and mini-kits containing rare seeds of kharif crops. This way the farmers return to their land as ambassadors of new agriculture.

In collaboration with the Hill Development Corporation the university plans to extend its fishery research into a commercial operation. Bhimtal and lakes in the surrounding area will soon be taken up for induced fish breeding, seed production, composite fish culture and a series of other experiments on different aspects of fisheries. The university has already achieved a major breakthrough when a record production of twenty lakh fish seed was supplied to the State Fisheries Department as well as to private fish farmers. The university has recently developed a new grain similar to wheat which is known as 'titricale'. This could give good production in hill and arid areas. It is hybrid of wheat and European rye. According to the preliminary investigations of the university, it can give 20 to 30% more production than wheat.

## IARI organises Vigyan Mela

A three-day Krishi Vigyan

Mela was organised by the Indian Agricultural Research Institute, New Delhi. Mr. B. D. Jatti, the Acting President of India, in his address said that the majority of the farmers in the entire country were still unaware about the latest production technology and the agricultural scientists and extension workers owed a special responsibility for spreading the new development in farming to far off places. He appreciated the good progress in the agricultural field which resulted in a record production of 118 million tonnes of grains this year. All credit for this goes to the work of the agricultural scientists.

The Krishi Vigyan Mela was attended by over 15,000 farmers and students from different parts of the country. Various new crops, vegetable varieties, model rural houses, small farm machinery, improved production technology, use of solar energy for drying paddy and bio-gas for cooking were displayed. The main theme of the Mela has been 'agriculture in integrated rural development'.

## Autonomous status for Presidency College

The Calcutta University is negotiating with the West Bengal Government for converting the Presidency College into an autonomous institution. The University Grants Commission had decided some time back to confer autonomous status on eight premier colleges in the country. The Calcutta University of which the Presidency College is a constituent has sent a team of observers to assess the capacity of the college in terms of space, resources and teaching staff required to teach different disciplines and conduct examinations at both undergraduate and postgraduate levels. Many changes have been effected since the visit of the team and it is now hoped that the college would be given autonomous status.

## Andhra honours Tope

The Andhra University conferred the honorary degree of Doctor of Laws on Professor T. K. Tope, Vice-Chancellor, University of Bombay, for his work in the field of constitutional and Hindu law. Professor Tope has been a member of the Law Commission set up by the Government of India and also of Law Commission appointed by the Government of Maharashtra. He has been the President of the Samajik Samanta Parishad and is connected with a number of educational and social science institutions. He has developed a national social service scheme with missionary zeal in the University of Bombay.

The honorary Doctorate in Literature was also conferred on Mr. S. Rau, Director, IAS Study Circle, New Delhi, Mr. H. G. V. Reddy, Consultant, Commodities Division, United Nations Conference of Trade and Development, Mr. K. V. Gopalaswamy, President, A. P. Sangeetha Natka Akademi and Mrs. K. Lakshmi Raghuramaiah, President, All-India Women's Conference, New Delhi.

## B. C. Roy Awards

Dr. B. C. Roy national awards for 1976 were announced recently. The award consists of Rs. 5,000 in cash and a medal. The recipients are : Dr. A. C. Das (KG Medical College, Lucknow), Dr. Indrajit Dewan (PG Institute of Medical Education & Research, Chandigarh), Dr. S. Ramachandra Rao (Gandhi Medical College, Hyderabad), Dr. G. S. Säuvani (B. J. Medical College), Pune, Dr. T. Manickani (Bangalore Medical College), Dr. P. R. Trivedi (Ahmedabad), Dr. J. M. Pahwa (Gandhi Eye Hospital, Aligarh). The oration award goes to Lt. Gen. R. S. Hood, Director-General of Armed Forces Medical Service, New Delhi.

## **UGC help for Delhi colleges**

The University Grants Commission will assist Hastinapur College, Bhagat Singh College, Maitreyi College, Satyawati College, Swami Shraddanand College, College of Vocational Studies, Dr. Zakir Husain College, Mata Sundari College for Women, the Institute of Home Economics and the Deshbahadhu College in the construction of their building programmes. The University of Delhi had pleaded strongly with the commission to provide adequate funds so that these colleges which are presently housed in school buildings or in rented premises will have their own buildings during the Fifth Plan period.

With the exception of Deshbahadhu College, all the colleges will be shifted to new premises for which land has already been acquired. The special long term allocations of the building fund for Deshbandhu College will be phased. The library block would be constructed in the first phase. The other buildings would be constructed in the subsequent phases.

## **New faculties for Bombay**

The Academic Council of Bombay University has proposed to the Senate to bifurcate the existing faculty of technology into three parts, viz., technology, pharmaceutical sciences and engineering and architecture. The University would thus have eleven faculties.

The university accepted recently endowments worth Rs. three lakhs from Dr. G. P. Kane Trust, Bombay, to institute gold medal, prizes, visiting professorship and research fund in the memory of Dr. Kane in the sphere of chemical technology.

Another donation of Rs. 15,000 was received from Peter Alvares Memorial Committee to institute a scholarship and bronze medal after Mr. Peter Alvares in the degree of Master of Labour Welfare and Industrial Relations.

## **Renewed efforts for the improvement of sports standards**

Gujarat, Himachal Pradesh, Karantaka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Delhi, Goa, Daman and Diu have provided incentives to their outstanding sportsmen & sportswomen in the form of State awards. All States have set up Sports Councils except in Haryana where its functions are looked after by the State Director of Sports. Uttar Pradesh and Tamil Nadu have enacted legislation for the preservation of the play-fields in urban and rural areas, while Nagaland, Bihar and Rajasthan are considering enacting such a legislation. Assam, Haryana, Kerala and Manipur have made arrangements to provide available open spaces for playfields.

Physical education, games and sports have been made compulsory at the school stage in Bihar, Punjab, Orissa, Tamil Nadu and Tripura while in Haryana it will be Compulsory from the next academic session. Andhra Pradesh, Gujarat, Manipur, Meghalaya, Uttar Pradesh and West Bengal

are actively considering similar proposals. In Delhi Physical education has been included in the curriculum for IX and Xth classes under the new pattern of education. Physical education, games and sports are compulsory subjects of study in the curriculum drawn up by the National Council of Educational Research and Training for the 10 years school system.

## **Panjab varsity reservations for weaker sections**

Panjab University has decided to reserve fifteen per cent of the posts of lecturers in its teaching departments and affiliated colleges for the scheduled castes and two per cent for scheduled tribes. Of the non-teaching posts, twenty per cent will be reserved for the scheduled castes and two per cent for the scheduled tribes. The university syndicate has adopted a resolution accordingly and has authorised the Vice-Chancellor to constitute a committee to look into the granting of exemption to medical colleges regarding reservation of seats for the scheduled castes and scheduled tribes as proposed by the University Grants Commission,

## **INDIAN SCHOOL OF MINES**

DHANBAD-826004

Advertisement No. 615003/56/77

CORRIGENDUM No. 1

Dated March 1, 1977.

Entrance Examination (1977) for admission to three-year B. Tech degree programme in (i) Mining Engineering and (ii) Mining Machinery.

In modification of our previous advertisement No. 615003/76 dated December 20, 1976, it is hereby notified that the last date for receipt of prescribed application form for the above examination has been extended upto April 15, 1977.

The dates for the examination, the examination centres and the other conditions will remain same.

CORRIGENDUM No. 2

Competitive Examination for direct admission  
in 3rd year Applied Geophysics course.

In modification of our previous advertisement No. 615056/77 dated January 31, 1977, it is hereby notified that the competitive examination for admission to the 3rd year of the 5 year programme will be held on Friday the 27th May and Saturday the 28th May, 1977 and NOT on 13th and 14th May, 1977.

M. S. Ramamurthy  
REGISTRAR

## A List of Doctoral Theses Accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Aslam, Bilquees. Theory and applications of absolute summability methods. University of Jabalpur.
  2. Bandopadhyay, Manjiri. Some problems in hydrodynamic stability including the effects of coriolis force, self gravitation, gravitational attraction or dynamic stabilization. University of Bombay.
  3. Gopal, Asgekar Gajanan. On self-gravitating magnetofluids. Shivaji University.
  4. Grewal, Beant Singh. Investigations in the theory of ballistics. University of Delhi.
  5. Gupta, Sat Narain. A study of block-wise error correcting and protecting burst codes. University of Delhi.
  6. Madan Prasad Singh. On infinite matrices and their applications to some results of Mathematical analysis. University of Bihar.
  7. Parihar, R.S. Contributions to physiological fluid dynamics. I.I.T., Kaupur.
  8. Ramanathan, A. Stable principal bundles on a compact Riemann surface. University of Bombay.
  9. Singhal, Bal Krishan. A study of generalized hypergeometric functions. Jiwaji University.
  10. Srinivasan, S. Some diophantine approximation problems in classical number theory. University of Bombay.
  11. Suman Rekha. A study of some polynomial sets. University of Delhi.
  12. Yadav, Virendra Singh. Absolute summability. Vikram University.
- Statistics**
1. Aggarwal, Manohar Lal. Some distribution problems in the theory of record statistics. University of Delhi.
  2. Arora, Jagat Ram. Mathematical analysis of some reliability models. University of Delhi.
  3. Arora, Savita. Optimization problems in mathematical programming. University of Delhi.
  4. Joshi, S.M. Distribution-free slippage tests for location parameter in K-samples and some problems in estimation of the location parameter with known coefficient of the variation. University of Bombay.
  5. Mudur, S.P. A formal approach to the design of microprogram controlled computers. University of Bombay.
  6. Rajagopalan, M. A study on genetic variation in arbitrary populations. University of Delhi.
  7. Verma, Shibu Singh. Statistical models for some physiological problems. University of Delhi.

#### Physics

1. Banerjee, Swapna. Some aspects of excited states of hypernuclei and the alpha particle model. University of Delhi.
2. Borgohain, Pabitra. On some dense massive sphere in general relativity. University of Gauhati.
3. Bukhari, Arun Prakash. Thermo and photo-electret effect in organic molecular solids with special reference to acenaphthene. University of Saugor.
4. Buloka Reddy, Satti. Internal conversion studies of some high multipole transitions. Andhra University.
5. Chakrabarti, Krishnagopal. New aspects of several elementary excitations in solids. University of Calcutta.
6. Chaudhury, Subhadra. Studies on some properties of metals and alloys. University of Calcutta.
7. Chhajlani, Rajinder Kumar. The wave propagation and instability of collisionless plasma in the presence of strong magnetic field. Vikram University.
8. Das, P.K. Investigations of compact massive objects with large central redshifts. University of Bombay.
9. Datta, Amitava. Some applications of gauge field theories. Visva-Bharati.
10. Dey, Tapas Kumar. Heat conduction in bismuthumantim and bismuth-thallium systems at liquid helium temperatures and above. University of Delhi.
11. Gangakhedkar, N. S. Spectroscopic studies of a few substituted and heteroatomic molecules, their crystals and mixed crystals doped by them. University of Bombay.
12. Garg, Suresh Chand. Space and angle-dependent steady-state thermal neutron spectra in coherent and incoherent moderators. University of Delhi.
13. Ghosh, Chunital. Studies on multialkali photocathodes and their application in an imaging device. University of Bombay.
14. Kundra, K.D. X-ray study of thermal expansion and phase transformation in some semiconductor chalcogenide materials. University of Delhi.
15. Madhu Prasad. A study of hysteresis in Clarke Solder Blob junctions. University of Delhi.
16. Mukhopadhyaya, Anup Kumar. Spectroscopic investigation of the crystalline field energy states of some rare-earth complexes. University of Calcutta.
17. Navalgund, R.R. Electron paramagnetic resonance studies in some ferroelectric crystals. University of Bombay.
18. Paliwal, S.B. Decay thermoluminescence and emission studies of SrS-HF-Phosphors. Bhopal University.
19. Patel, S.B. High resolution electron and gamma ray spectroscopic studies of some deformed nuclei. University of Bombay.
20. Raychaudhuri, Prabhas. Neutrino emission and its astrophysical implications. D.Sc. University of Calcutta.
21. Sharma, D.P.P. Mechanical and optical studies of materials. University of Jabalpur.
22. Shah, Rameshchandra Thakorla. Microtopography and related study of crystal surfaces by high resolution techniques. M.S. University of Baroda.
23. Sharma, Vijender. Small and large signal impedance measurements and transverse instability effects in impatt diodes. University of Delhi.
24. Tandon, Ram Pal. Electrical behaviour of semiconducting transition metal oxide phosphate glasses. University of Delhi.
25. Venkatachari, R. Collision frequency and temperature in the F-region of the ionosphere. Andhra University.

#### Chemistry

1. Agrawal, Dadu Ram. Studies on N-arylhdroxamic acids and their metal chelates. Ravishankar University.
2. Agarwal, Jagdish Saran. Studies on the composition, structure and formation of urinary calculi. University of Delhi.

3. Ahuja, Virendra Kumar. Molecular orbital (MO) study of  $\alpha$ -pyrone and  $\gamma$ -pyrone derivatives. University of Delhi.
4. Aisi Kumar Singh. Analytical applications of substituted pyrimidines. University of Delhi.
5. Ambulkar, Ramesh Sadashivrao. Stability constants and thermodynamic functions of some gallium (III) complexes. Nagpur University.
6. Bajpai, Uday Diwakar Nath. Studies on addition polymerization. University of Jabalpur.
7. Barnela, S.B. Heterocyclic studies. University of Bombay.
8. Chetty, K. Venugopal. A study in heterogeneous equilibria: Surface areas of sulphides. Sri Venkateswara University.
9. Datar, A.G. Gas chromatographic studies. University of Bombay.
10. Devendra Kumar. Synthetic studies in coumarins University of Delhi.
11. Durlabh Kumar. Two new flavono-lignans from *Hydnocarpus weightiana* and Syntheses of some naturally occurring dimers. University of Delhi.
12. Gaikwad, M.S. Structural studies of metal-complexes of ethyl  $\alpha$ -isonitrosoacetacetate (Heina). University of Bombay.
13. Ganguly, Prabuddha. Magnetic and spectroscopic studies on ferric dithiocarbamates. University of Bombay.
14. Gautam, Narinder Kumar. Studies on some new titrimetric methods for thiocarbonate-sulphur determination and micro-analytical evaluation of metal ions. University of Delhi.
15. George, Kurian V. Studies on liquid crystalline properties of cholesteric and nematic esters. M.S. University of Baroda.
16. Fernandes, Anand Ganesh. Kinetics and mechanism of oxidation of some pentoses by quinquevalent vanadium. Jiwaji University.
17. Hanumanthu, P. Studies in the formation of heterocycles: Condensation of diamines, o-aminobenzemides and phenols with Schiff bases. Osmania University.
18. Jolly, Shashi. Studies on the kinetics of lignin (unreacted and dichromate reacted) formaldehyde reaction from lignin isolated from *Pinus roxburghii*. Meerut University.
19. Kamath, Vinayak B. Sorption studies of benzoic acids with ion exchange resins. M. S. University of Baroda.
20. Mansharamani, D. C. Anthrone and their derivatives. University of Bombay.
21. Mukhopadhyay, Samarendra. Synthesis of heterocyclic compounds of possible analgetic activity. University of Calcutta.
22. Nandi, Murari-mohan. Studies on chelates and chelating agents containing sulphonamido group. University of Calcutta.
23. Natarajan, K. Studies on triphenylphosphine and triphenylarsine complexes of ruthenium (III) and ruthenium (II) I. I. T., Kanpur.
24. Parijasamy, N. Studies on electrochemiluminescence. University of Bombay.
25. Patwa, B.S. Studies on sulphones. Saurashtra University.
26. Pujari, Panchanan. Physico-chemical studies on imidazole complexes of cobalt (II) and nickel (II). Utkal University.
27. Rajaraman, R. Studies in the synthesis of protoberine alkaloids. University of Madras.
28. Rajeswari, S. Studies in alkaloids. University of Madras.
29. Ramana, Karri Venkata. Some studies on oxalato complexes and reduction of trivalent thallium. Andhra University.
30. Ramji Rao, K. Synthesis of nitrogen heterocycles of potential pharmacological interest viz. dyridazine derivatives. Osmania University.
31. Ramaswamy, P. Studies in extraction polarography : Resacetophenone oxime as chelating agent in the determination of first transition metals. Sri Venkateswara University.
32. Ray, Hirshikeshchandra. Studies on Indian clays. D.Sc. University of Calcutta.
33. Roy, S. D. Studies on some 12-molybdophosphates : A group of inorganic ion exchange. University of Bombay.
34. Sarkar, Alok. Phytochemical studies on Indian plants University of Calcutta.
35. Saxena, Shashi. Metal chelates of some nitrogen containing ligands and their micro-analytical applications. University of Delhi.
36. Sen, Kali Das. Hartree Fock Slater wave functions and Sternheimer shielding antishielding factors in atoms and ions. I. I. T. Kanpur.
37. Sengupta, Sukanta. Mechanism of reactions of some transition metal complexes : Ligand substitution reactions of some nickel (II) complexes. University of Calcutta.
38. Sharma, Arbinda. Studies on heterocyclics. Sambalpur University.
39. Srivastava, Rajmohan Rai. Physico chemical studies of vegetable oils. Vikram University.
40. Singaram, Bakthan. Studies in terphenois : Investigations into the chemistry of certain terpene nitrosochloride hydrosulphide nirosite, B-naphthol and maleic anhydride. University of Madras.
41. Thakara, Atmaram. Study on petroleum waxes. Sardar Patel University.
42. Ugarkar, Bheemrao Ganapatrao. Reactions of mesoionic compounds and their biological evaluation. Karnataka University
43. Vakatkar, V. V. Synthesis of polycyclic compounds. University of Bombay.
- Earth Sciences**
1. Andnd Mohan. Structure, metamorphism and the associated iron ore deposits of the area around Narnaul. Mohindergarh District, Haryana. University of Delhi.
2. Haldar, Dhanpati. Petrology of the ultramafic rocks with special reference to the origin of chromite around Nausahi, Keonjhar District, Orissa, India. University of Calcutta.
3. Mohabey, Nawalkishore. Structural and petrological studies of mafic and associated rocks northwest of Bhandara Nagpur University.
4. Sawarkar, Anna Rajramji. Re-evaluation of geology and stratigraphy of the cretaceous tertiary sequence of Pondicherry State and adjoining parts of South Arcot District, Tamil Nadu, with special reference to their economic deposits. Nagpur University.
- Engineering & Technology**
1. Agrawal, Damodar Prasad. Studies on shaped fuel from non caking coal-char fines. Nagpur University.
2. Anand Kumar. Analysis and calculation of internal separated flow at large Reynolds number. I.I.T., Kanpur.
3. Balasubramanian, R. Accurate evaluation of transients on double circuit BHV transmission lines. I.I.T., Kanpur.
4. Bansal, R. K. Estimation of stability domains for the transient stability investigation of power systems. I. I. T., Kanpur.

5. Chandrasekharan, K. Kinetics of heterogeneous reactions. University of Bombay.
6. Garg, A. C. Some crack and punch problems in the mathematical theory of elasticity. I. I. T. Bombay.
7. Gupta, V. K. Studies in optimal design of nonhomogeneous columns and beams. I.I.T., Kanpur.
8. John, U. Lazar. Development and evaluation of flocculating algal bacterial system for waste water treatment. I.I.T. Kanpur.
9. Kane, V. G. On the binding number of a graph. I.I.T. Kanpur.
10. Karmakar, S.R. Studies in swelling. University of Bombay.
11. Khanapuri, B. C. Investigation of the effect of organometallic additives on the combustion of liquid fuels. I. I. T. Bombay.
12. M. Prasad. Pressure, volume, temperature relationships of refrigerant 500 gas. I. I. T., Kanpur.
13. Mowade, Chandkaot Yeshavantrao. The study design, construction and performance of the transistorised distance relay. Nagpur University.
14. Narjappa, G. Simulation of hydrology of ground water systems in low rainfall areas : Modelling of pre-pending phase of infiltration under constant. I.I.T. Bombay.
15. Pritam Singh. Development of furan chemicals. University of Bombay.
16. Sadri, K.H. Synthesis of some heterocyclic compounds. University of Bombay.
17. Salvi, A.S. Studies in natural and synthetic fibres. University of Bombay.
18. Srivastava, K. G Studies in the chemical modification of cashewnut shell liquid. University of Bombay.
19. Subramanyan, V. Local mass transfer rates in batch fluidized beds. University of Madras.
20. Sundara Raman, P. New approaches to the synthesis of drug intermediates. University of Bombay.
21. Tare, J. P. Separation of close boiling organic compounds by adductive crystallization. University of Bombay.

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- Levine, Donald M. and Bane, Mary Jo, ed *Inequality controversy : Schooling and distributive Justice*. New York, Basic Books, 1975. 338p.
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# CLASSIFIED ADVERTISEMENTS

## INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Advertisement No. 3/77 (Phase-II) :

Applications are invited for the following positions for the Departments / Sections / Centres / Programmes / Laboratories in this Institute :

<i>Name and scale of the post</i>	<i>No. of posts</i>	<i>Allotment of posts</i>
i) Technical Officer (Foreman Selection Grade) Rs. 650-30-740-35-810-EB-35-880-40-1000-EB 40-1200.	3	1 Electron Microscope Lab. 1 Telephone Exchange 1 Motor transport Unit
ii) Senior Technical Assistant Rs. 550-25-750-EB-30-900.	5	1 Electron Microscope Lab. 1 Graphic Arts Section 1 Chemistry Department 2 Civil Engineering Deptt. 3 Physical Training & Games
iii) Physical Training Instructor Gr. I Rs. 550-25-750-EB-30-900.	3	2 Civil Engineering Deptt. 1 Van do Graaff Laboratory
iv) Technical Assistant Rs. 425-15-500-EB-15-560-20-700.	3	1 Security Unit
v) Assistant Security Officer Rs. 425-15-500-EB-15-560-20-700.	1	
vi) Mechanic Grade 'A' Rs. 380-12-500-EB-15-560	5	1 Chemistry Department 1 Civil Engg. Department 1 Central Glass Blowing 2 Refrigeration Unit
vii) Mechanic Grade 'B' Rs. 330-8-370-10-400-EB-10-450.	3	1 Chemistry Department 2 Civil Engg. Department
viii) Senior Laboratory Assistant Rs. 380-12-500-EB-15-560.	1	1 Electrical Engineering Deptt.
ix) Draftsman Grade II Rs. 330-10-380-EB-12-500-EB-15-560.		
<b>QUALIFICATIONS AND EXPERIENCE :</b>		
<b>SECTION - I ESSENTIAL :</b>		
i) Technical Officer (Foreman Selection Grade) :		
Degree in Engineering OR M.Sc. + 10 years' experience OR		
Diploma in Engineering + 15 years' experience.		
ii) Senior Technical Assistant :		
M.Sc. OR		
Diploma in specified branch of study + 10 years' experience in Lab./Workshop.		
iii) Physical Training Instructor Gr. I :		
Graduate with Diploma in Physical Education and NIS coaching certificate plus six years' experience as Physical Training Instructor in a Govt. recognised Institution.		
<b>iv) Technical Assistant :</b>		
B.Sc. OR		
Diploma in specified branch of study + 5 years' experience in Lab./Workshop.		
<b>v) Assistant Security Officer :</b>		
Graduate + 6 years' experience of Security Supervision in a Govt. recognised organisation. OR		
Released personnel from Defence Services of the rank not below Senior J.C.O. or of equivalent rank from Police or Industrial Security Force.		
<b>vi) Mechanic Grade 'A' :</b>		
1. High School + Diploma in Engineering OR High School + ITI Trade Certificate + 10 years' experience		
2. Ability to manufacture, construct and erect from working drawings and ability to make simple dimensioned sketches.		
3. Ability to work within prescribed tolerances.		
4. Knowledge of Hindi and Blue Printing reading.		
<b>vii) Mechanic Grade 'B' :</b>		
1. High School + ITI Trade		
<b>Certificate + 5 years' relevant experience</b>		
2. Ability to manufacture, construct and erect from working drawings and ability to make simple dimensioned sketches.		
3. Ability to work within prescribed tolerances.		
4. Knowledge of Hindi and Blue Printing reading.		
<b>viii) Senior Laboratory Assistant :</b>		
High School (Sc.) + ITI Certificate + 5 years' relevant experience		
<b>OR</b>		
Diploma in Engineering		
<b>OR</b>		
B.Sc.		
<b>ix) Draftsman Grade II :</b>		
High School + ITI Certificate in Draftsmanship + 5 years' experience.		
<b>DESIRABLE :</b>		
Ability to produce finished drawings independently from rough sketches.		
<b>Section II :-DESIRABLE :</b>		
<b>a) Electron Microscope Laboratory :</b>		
(i) Technical Officer (Foreman Selection Grade) :		
Experience in handling Vacuum devices and Solid State Circuits. Preference will be given to applicants with previous working experience in electron microscope or X-ray Laboratories,		
(ii) Senior Technical Assistant (in case none of the candidates is found suitable for Senior Technical Assistant, offer will be made on the post of Technical Assistant).		
(1) Experience with solid state electronic equipment, (2) Experience with vacuum systems, (3) General laboratory experience of five years.		
<b>(b) Telephone Exchange :</b>		
Technical Officer (Foreman Selection Grade) :		
Experience in installing, maintenance of MAX. Experience in outdoor cable work. Preference will be given to applicants who have spent considerable time in supervisory capacity in addition to being overall in charge for technical work in connection with telephone system consisting of PBX, PABX and multiple exchanges.		

(c) **Graphic Arts Section :**

**Senior Technical Assistant :**

Knowledge of commercial photography and darkroom processing with atleast five years working experience in this trade also.

(d) **Chemistry Department :**

**(i) Senior Technical Assistant :**

Experience in coordinating and organising technical work pertaining to setting up and operation of laboratories/experience in fabrication, repair and maintenance of mechanical equipment used in laboratories/experience in fabrication, repair and maintenance of electrical and electronic equipment used in Laboratories. Preference for those working in Chemistry/Chemical Engineering Laboratory may be given.

**(ii) Senior Laboratory Assistant :**

Experience in preparation and other works in large teaching/research laboratories.

**(iii) Mechanic Grade 'B' :**

Experience in carpentry work pertaining to laboratories with capabilities of fabrication of teaching aids and models.

(e) **Civil Engineering Department**

**(i) Senior Technical Assistant :**

Experience in any one or more of the Civil Engineering Lab./Workshop/ operation and maintenance of equipment.

**(ii) Technical Assistant :**

Experience in any one or more of the Civil Engineering Laboratories and skill in various machine operation, maintenance and repair of equipment and design and drawing in Civil Engineering.

**(iii) Senior Laboratory Assistant:**

Experience in assisting in setting up laboratories experiments etc. for laboratory classes and research activity in any one or more of the Civil Engineering Laboratories.

**(iv) Mechanic Grade 'A'/B' :**

General Mechanic having skill in machine operations, welding and capable of repairing and maintaining equipments.

(f) **Physical Training & Games :**

**Physical Training Instructor Grade I :**

Preference will be given to

sportsmen of national repute who have represented India or State.

(g) **Electrical Engineering :**

**Draftsman Grade II :**

Ability to prepare circuit diagrams of electronic circuits.

(h) **Central Glass Blowing :**

**Mechanic Grade 'B' :**

Experience in glass blowing, repair and maintenance of associated equipment.

(i) **Refrigeration Unit :**

**(i) Mechanic Grade 'B' - I :**

Experience in detecting and rectifying faults of all sorts of Domestic Cooling Units such as Air-conditioners, Water-Coolers, Refrigerators etc. and knowledge of electrical wiring of cooling units.

**(ii) Mechanic Grade 'B' (Winder) - I :**

Knowledge of winding of Air-conditioner, Water Cooler, Refrigerator Fan motors and compressors.

(j) **Motor Transport Unit :**

**Technical Officer (Foreman Selection Grade)**

(i) Atleast 5 years of the indicated experience should be in automobile fleet operation on a fleet of not less than 20 vehicles. Out of this atleast two years should have been as fleet in-charge responsible for scheduling, maintenance spare parts inventory control, duty allocation, etc.

(ii) Should have practical knowledge regarding the maintenance of petrol and diesel vehicles.

(iii) Candidates not having the above indicated experience need not apply.

(k) **Van de Graaff Laboratory .**

**Technical Assistant :**

Experience in nuclear instrumentation OR Experience with nuclear accelerator and its auxiliary systems, such as vacuum pumps, gas driving system, compressors etc.

NB :- (i) Two posts of Technical Officer (Foreman Selection Grade); Senior Technical

Assistant/Physical Training Instructor Grade I and three posts of Technical Assistant/Assistant Security Officer/Mechanics/Senior Laboratory Assistant/Draftsman Grade II are reserved for candidates belonging to Scheduled Castes/Scheduled Tribes.

2) Qualifications may be relaxed by the Selection Committee in case of very good experience and record.

3) Experience may be relaxed by the Selection Committee in case of candidates possessing higher qualifications and excellent records.

4) Selection Committee can recommend appointment in lower position if necessary.

Posts are permanent and carry retirement benefits in the form of CPF Scheme or CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to Central Government employees stationed at Kanpur. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route. All applicants from Govt./Quasi-Govt organisations, public undertakings should forward their applications through proper channel.

Applications for Technical Officer (Foreman Selection Grade)/Senior Technical Assistant/Technical Assistant/Physical Training Instructor Gr. I/Assistant Security Officer posts should be made on the prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size accompanied by an Indian Postal Order of Rs. 7.50 (Rs. 1.87 for Scheduled Castes/Scheduled Tribes candidates) and for the posts of Senior Laboratory Assistant/Mechanic Grade 'A'/B'/Draftsman Grade II should be made on plain paper, stating qualifications, experience, pay and present scale of the post now held and other particulars and accompanied by an Indian postal order for Rs. 3/- (0.75 paise for Scheduled Caste/Scheduled Tribe candidates) in the name of Registrar, Indian Institute of Technology, Kanpur should reach the Registrar, Indian Institute of Technology, Kanpur-208016 on or before April 15, 1977.

## Advertisement

### SHIVAJI UNIVERSITY, KOLHAPUR. (Maharashtra State)

Applications are invited for the following posts :

**1. CHEMISTRY** : One Professor (Sugar Chemistry or Chemical Technology). One Lecturer (Sugar Chemistry) Persons with Organic Spectroscopy will be given preference.

**2. ZOOLOGY** : One Professor (Cell Biology).

**3. PHYSICS** : Three Professors :—

- (i) Solid State Physics (Experimental Semiconductors)
- (ii) Material Science/Electronics and Microwave or Theoretical Physics (iii) Open for other specialisations

**4. MATHEMATICS** : One Professor (Pure Mathematics)

**5. GEOGRAPHY** : One Professor.

**6. SOCIOLOGY** : One Professor. One Lecturer.

**7. POLITICS** : One Professor.

**8. HISTORY** : One Reader (Ancient Indian History or North Indian History). One Lecturer.

**9. ECONOMICS** : One Professor (Econometrics Mathematical Economics). One Reader Transport Economics/Industrial Economics/Agricultural Economics).

**10. ENGLISH** : One Reader.

#### PAY SCALES :—

(i) Professor : Rs. 1100-50-1300-60-1600. ii) Reader : 700-50-1250. iii) Lecturer : 400-40-800-50-950. These scales are likely to be revised.

#### QUALIFICATIONS AND EXPERIENCE :

**1. PROFESSOR** : a) First or Second Class Master's Degree and Doctorate Degree in the subject of a Statutory Indian or Foreign University of repute. b) Teaching Post-Graduate classes for about ten years and guiding successfully some Ph. D. Students. Published research work of merit will receive due consideration.

*Note* : Some of the conditions may be relaxed in the case of exceptionally capable candidates.

**2. READER** : a) A Doctorate Degree of any recognised University Indian or Foreign with at least second class either at Bachelor's or Master's Degree and published independent research work. b) Seven year's experience of teaching Post Graduate Classes.

*Note* : Some of the conditions may be relaxed in the case of exceptionally capable candidates.

**3. LECTURER** : a) A First or Second Class Master's Degree OR a) A Doctorate degree with at least Second Class Bachelor's Degree. OR a) Any other equivalent Degree or Degrees of an Indian or Foreign University. AND b) Five year's experience of teaching Graduate Classes at the Special or Principal level or at Post Graduate level. (Ph. D. with M. A./M. Sc. II

Class will be considered as teaching experience). c) Preference will be given to candidates belonging to Scheduled Castes, and Scheduled Tribes.

Prescribed application forms (seven copies) can be had from the University Office. Desiring candidates are requested to send Indian Postal Order of Rs. 3.50 alongwith self addressed envelope with a postage of 00-70 ps.

Seven copies of applications alongwith necessary enclosures should reach the Registrar, Shivaji University, Vidyanager, Kolhapur-416004, on or before 25th April, 1977.

Kolhapur

Usha Ithape

Date : 21. 3. 1977

REGISTRAR

### GUJARAT AGRICULTURAL UNIVERSITY Ahmedabad-380004

Advt. No. 3.77

Applications in prescribed forms (available on working days between 11.00 a.m. to 2.00 p.m. from the Registrar, Gujarat Agricultural University, Shahibag, Ahmedabad-380004 on cash payment of 0.50 paise or by sending crossed Indian Postal Order of equal amount issued in favour of Comptroller, Gujarat Agricultural University, Ahmedabad alongwith self addressed envelope affixed with 0.50 paise postage stamps) are invited for the following posts:

Sr. No.	Designation of the post	Pay scale
1.	Training Organizer	Rs. 1100-50-1300-60-1600
2.	Training Associate (Crop production)	Rs. 700-50-1250
3.	Training Associate (Home Science)	—do—
4.	Training Associate (Forage Crop)	—do—
5.	Training Associate (Dairy)	—do—
6.	Training Associate (Plant protection)	—do—
7.	Training Associate (Soil & Water Management)	—do—
8.	Training Assistant (Ani Production)	Rs. 500-25-950
9.	Training Assistant (Farm Engineering)	—do—
10.	Training Assistant (Crop Production)	—do—
11.	Training Assistant (Home Science)	—do—
12.	Training Assistant (Audio Visual Aid)	—do—

The candidates for the post of Training Organiser should possess at least Master's degree and the candidate for the post of Training Associate/Training Assistant should possess at least Second Class Bachelor's degree in the concerned field.

Other details about experience etc. will be supplied alongwith the application form. University employees may obtain the details by request in plain paper.

Applications complete in all respect should reach the Registrar, Gujarat Agricultural University, Ahmedabad on or before 15-4-77.

Ahmedabad,  
Dt. 9-3-1977

Sd/-  
L. C. Patel  
REGISTRAR

## LUCKNOW UNIVERSITY

Corrigendum to Advertisement No. 2/1977

1. As already notified all the teaching posts advertised in Advertisement No. 2/1977 have been sanctioned under the Fifth Five Year Plan and hence they are initially on a temporary basis.

2. The posts of Professor of Hindi at serial No. 6 and Lecturer in Mathematics at serial No. 33 in the aforesaid advertisement are deleted. *s.d./-*

Kaushal Kishore  
Deputy Registrar

## UNIVERSITY OF KERALA

No. Ad. AII. 3.304/77

### Notification

Applications are invited from qualified candidates for appointment as LECTURERS in the following University Departments.

Name of Department	No. of posts
1. Department of Physics	2
2. Department of Chemistry	1
3. Department of Bio-Chemistry	2
4. Department of Aquatic Biology & Fisheries	2
5. Department of Economics	1
6. Department of Psychology	1
7. Department of History	2
8. Institute of English	1
9. Department of Russian	1
10. Department of Linguistics	1*
11. Department of Journalism	1

\*The post in the Department of Linguistics is Lecturer in Telugu.

### SCALE OF PAY : Rs. 600 - 1250

Appointments will be made in accordance with Section 6, Sub Section (ii) of Chapter II of the Kerala University Act of 1974.

The details of qualifications, age, etc. and application form can be had from Deputy Registrar (Administration), University of Kerala, Trivandrum on production of a receipt for Rs. 2/- from the State Bank of Travancore or Crossed Postal Order drawn in favour of the Registrar, University of Kerala, Trivandrum, specifying the post for which application forms are required.

The candidates who have sent in requisitions for application forms in response to University Notification No. Ad. AII. 3. 169/76 dt. 25-2-76 (Subsequently cancelled) will be supplied the same.

The Last Date for receipt of application is 15-4-1977.

University  
Buildings, A. Sreedhara Menon  
Trivandrum. REGISTRAR  
9-2-1977.

## INDIAN SCHOOL OF MINES

DHANBAD-826004.

Dated March 19, 1977.

Adv. No. 420007/77

Indian School of Mines, Dhanbad a residential "deemed University, offers programmes of study leading to the B.Tech/M.Tech Degree in Mining Engineering/Petroleum Engineering/Mining Machinery/IDISM/MTech) in Coal/Mineral Preparation, and MSc and MSc (Tech in Applied Geology and Applied Geophysics. It has on its rolls about 40 Research Scholars and Fellows working for a doctoral degree in different disciplines. It has also an ambitious programme of continuing education specifically designed for the mineral industries. Besides offering consultancy/testing services (it is in the approved panel of consultants maintained by IDBI), the School is developing a highly purposeful role in the R & D field. It has a Centre of Mine System Design and proposes to organise a Centre of Higher Studies in Ore Deposits.

The School has following permanent vacancies -

1. Registrar in the pay-scale of Rs. 1300-1700 (likely to be revised to Rs. 1500-2000).
2. Assistant Registrar in the pay scale of Rs. 700-1300/-
3. Medical Officer in the pay scale of Rs. 700-1300/-plus NPA @ 25% .

Besides pay, I S M employees get allowances as admissible to Government of India employees.

### Qualifications:

#### Registrar:

- (i) A Master's Degree in Science, Arts, Commerce or a Degree in Engineering or Technology, with not less than 60% marks in the qualifying examination. (Essential)
- (ii) About ten years administrative experience in positions of responsibility in a academic institution of degree standard, or university or research institute, or Government Department/autonomous organisations, dealing with academic matters. (Essential)
- (iii) Familiarity with academic (including examination) matters and financial matters such as budgeting, accounts etc. (Essential)
- (iv) Experience of handling agenda and minutes of meetings. (Desirable)
- (v) Knowledge of Government rules and regulations including those relating to accounts. (Desirable)
- (vi) Direct experience as Registrar or Deputy Registrar of a University or Institution of degree level. (Desirable).

#### Assistant Registrar:

- i) Master's Degree with at least 60% marks in the aggregate. (Essential)
- ii) Administrative experience relating to academic work including examinations. (Essential)
- iii) Ability to draft and edit reports meeting-agenda and minutes in English. (Essential)
- iv) Acquaintance with and experience of semester system (Desirable)

#### Medical Officer:

- i) Bachelor Degree in Medicine approved by the Medical Council of India. (Essential)

- ii) Five years' experience in practice of medicine (Essential)
- iii) A Post-graduate degree/diploma in medicine. (Desirable)

Age : Not more than 45 years for the post of Registrar and 40 years for the posts of Assistant Registrar and Medical Officer.

**General :** Applicants should be prepared to appear for an interview either at Dhanbad or Delhi/Calcutta at short notice. The successful candidate is expected to join immediately. First class Railway fare by shortest route is reimbursable to candidates coming for the interview. A 'No Objection Certificate' should be produced from their employers at the time of the interview.

**How to Apply :** Six copies of complete bio-data on plain paper (i. e. 1. 1 Name in full and address (in capital letters) 1.2 Date of birth 2.1 Nationality 2. 2 State if Scheduled Caste/Tribe. (In such cases, certificates from appropriate authorities to be attached) 3. 1 Particulars of academic and technical qualifications 3. 2 Details of experience/position held, nature of duties, scale of pay (and last pay drawn), etc. 4. 1 minimum salary acceptable 4. 2 Minimum notice required 5. Additional information if any,) accompanied by a money order receipt of Rs. 8/- (Rs. 2/- for Scheduled Caste/Scheduled Tribe candidates) in token of remittance of application fee should reach the Registrar, Indian School of Mines, Dhanbad-8-60004 by April 11, 1977.

The School reserves the right to consider cases of 'Contact Candidates' whose names have been suggested by experts even though they have not formally applied for the post.

Relaxation in age and qualifications may be given in the case of candidates otherwise considered specially suitable.

#### CANVASSING IN ANY FORM WILL BE CONSIDERED A DISQUALIFICATION.

M. S. Ramamurthy  
REGISTRAR

#### LUCKNOW UNIVERSITY

#### Advertisement No. 7/ 1977

Applications are invited for the following posts :-

1. One Reader in Applied Economics in the Faculty of Commerce, in the grade of Rs. 1200-50-1300-60-1900.

#### QUALIFICATIONS:

**Essential**--(a) A doctorate in the subject of study concerned or a published work of a high standard in that subject; and (b) Consistently good academic record (that is to say the overall record of all assessments throughout the academic career of a candidate) with first or high second class (that is to say with an aggregate of more than 54% marks) Master's degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work is of a very high standard, it may relax any of the qualifications specified in sub-clause (b) of clause 1.

2. Experience of teaching honours/post-graduate classes for not less than five years and published research work of high standard in the subject.

**Preferential**--Experience of teaching post-graduate classes and guiding research.

#### LECTURERS IN THE GRADE OF Rs 700-40-1100-50-1600 :

2. Two Lecturers in Sanskrit
3. One Lecturer in Persian
4. Two Lecturers in Ancient Indian History & Archaeology
5. One Lecturer in Arabic
6. One temporary Lecturer in Arabic for teaching Modern Arabic Courses
7. Two temporary Lecturers in Commerce.

#### QUALIFICATIONS :

**Essential**--(a) A doctorate in the subject of study concerned or a published work of a very high standard in that subject; and (b) Consistently good academic record (that is to say the overall record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to

say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work is of a very high standard, it may relax any of the qualifications specified in sub-clause (b) supra.

**Preferential**--Experience of teaching degree/honours/Postgraduate classes for two years.

One Part-time Lecturer in Commerce on Rs. 200/- p.m.

#### QUALIFICATIONS :

**Essential**--First or high second class Master's Degree in the subject concerned with a good academic record.

#### GENERAL :

For purposes of qualifications required for the above posts, the Degree obtained in a subject taught in a Department which is subsequently constituted into separate Departments, shall be deemed to be degree in the subject concerned for the newly constituted Departments.

Benefits of Provident Fund available as admissible under the rules on confirmation for permanent posts. Period of probation for permanent posts is one year. It is not necessary to fill any/all of the advertised posts.

For the posts of Lecturers, other things being equal, preference will be given to Scheduled Castes/Tribes candidates, who are considered fit. Such candidates should indicate in their applications that they belong to Scheduled Castes / Tribes, attaching certificate from the District Magistrate of the District to which they belong. No other certificate for this purpose will be entertained. In case of Scheduled caste/Scheduled Tribe candidates interviewed by the Selection Committee, if suitable candidates are not available for appointment to the posts of Lecturers, the Selection Committee may recommend appointment of suitable candidates as Research Associate in the scale of Rs. 700-1300 for a period upto three years and these persons could later compete for the posts of Lecturers as and when vacancies occur.

Applications on the prescribed form (available on request, accompanied with a self-addressed envelope of size 23 cm x 10 cm free of cost, from the office of the Registrar) with recent testimonials, publications etc. should reach the Registrar, Lucknow University by Friday, April 22, 1977. The candidates who are in service must send their applications through proper channel. Application Forms to outstation candidates will be issued by post upto Friday, April 15, 1977.

B. N. SINGH  
REGISTRAR

# UNIVERSITY COLLEGE OF MEDICAL SCIENCES

Ring Road, New Delhi—110016

Applications are invited for the following posts in the College:

**A : Teaching Posts :**

Department	Post	No.	Pay-Scale	Qualifications	Experience
Physiology	Lecturer	1	Rs. 700-40-1100-50- 1600/-	MBBS, M.O. (Physiology)/M.Sc. (Physiology)/Ph.D. (Physiology)/ D.Sc. (Physiology)	3-years teaching experience as Tutor/Demonstrator in Physiology of which 1 year should be after postgraduate qualification.
	Demonstrators	2	Rs. 300-25-350/-*	MBBS or M.Sc. (Physiology for non-medical persons)	
Pathology	Demonstrators	4	Rs. 300-25-350/-*	M.B., B.S.	
Pharmacology	Demonstrators	2	Rs. 300-25-350/-*	M.B., B.S.	
Bio-chemistry	Professor	1	Rs. 1500-60-1800- 100-2000-125/2- 2500/-	MBBS, MD (Biochemistry)/M.Sc. (Medical Biochemistry)/Ph.D./D.Sc. (Biochemistry)	As Associate Professor/Reader in Biochemistry for 5 years in a Medical College.
	Demonstrators	2	Rs. 300-25-350/-*	MBBS, or M. Sc. (Bio-chemistry for non-medical persons)	
Social & Pre- ventive Medi- cine.	Lecturers	2	Rs. 700-40-1100- 50-1600/-	MD (PSM)/Speciality BD. of PSM (USA)/Dr. P.H. (John Hopkins)/ Dr. P.H. (Harvard)/Dr. P.H. (California) M.O.(Med) with D.P.H., M.D. (Comm. Health)	3-years teaching experience as Tutor/Demonstrator in Pre. & Soc. Med. or as Epidemiologist. Health officer of which 1 year should be after post-graduate qualification.
Anatomy	Demonstrators	3	Rs. 300-25-350/-*	M.B., B.S.	
	Demonstrators	2	Rs. 300-25-350/-*	M.B., B.S./M.Sc. (Anatomy for non- medical person.)	
Microbiology	Lecturer	1	Rs. 700-40-1100- 50-1600	MBBS, MD(Bacteriology) MD (Microbiology); MD (Bacteriology with Pathology)/MD (Pathology & Bacteriology)/M.Sc. (Bacteriology), M.Sc. (Microbiology)/Diploma in Bacteriology.	3 years teaching experience as Tutor/Demonstrator in Bacterio- logy/Clinical Pathologist/Resi- dent Pathologist of which 1 year should be after post-graduate qualification.
	Demonstrators	2	Rs. 300-25-350/-*	M.B., B.S. or M.Sc. (Microbiology) for non-medical persons.	
Forensic Medicine	Reader	1	Rs. 1200-50-1300- 60-1900/-	MBBS, MD (Forensic Medicine)/ MD (Path)/Speciality Board of Pathology (USA)	As Assistant Professor/Lecturer in Forensic Medicine for 3 years in a Medical College.
	Lecturers	2	Rs. 700-40-1100- 50-1600/-	MBBS, MD(Forensic Medicine)/ M.D. (Path)/Speciality Board of Pathology (USA).	
Demonstrators 3 Rs. 300-25-350/-* M.B., B.S.					

**B : FOR RURAL & URBAN HEALTH CENTRES :**

Lady Medical Officer	2	Rs. 700-40-1100- 50-1300/-	MBBS with MD (Gynac & Obst.) DGC with experience.
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(\*Pre-revised scale)

Medical Social Worker (Female)	2	Rs. 425-15-500- EB-15-560- 20-700/-	M.A. in Social work	Atleast two years field experience in Medico-social work.
Public Health Nurse	2	Rs. 425-15-500- EB-15-560- 20-700/-	B.Sc. Nursing or 'A' grade Nurse with Health Visitor Training or 'A' grade nurse with Public Health Training.	
Technical Assistants	3	Rs. 425-15-500- EB-15-560- 20-700/-	B.Sc. from recognised Univ. Diploma in Medical Laboratory Technology	Three years experience as Sr. Lab. Asstt. in a Medical College/Hospital.
Record Clerks	2	Rs. 260-6-290- EB-6-326-EB- 8-390-10-400/-	Higher Secondary	Two years experience of handling medical records in a Medical College/Hospital. Proficiency in typing essential.

#### C : GENERAL POSTS :

Assistant Registrar	1	Rs. 700-40-900- EB-50-1300/-	A Second class Master's Degree	Atleast Ten years office experience of which five years should be in a Supervisory capacity.
Superintendent (Admin.)	1	Rs. 550-25-750- EB-30-900/-	A Second class Bachelor Degree	Ten years office experience of which atleast three years should be as Sr. Asstt./Head Clerk. Preference to be given to candidates having worked in an educational institution.
Superintendent (Accounts)	1	Rs. 550-25-750- EB-30-900/-	A Second class B. Com. Degree	Ten years experience of which at least 3 years should be as Sr. Assistant/Head Clerk in Accounts Section of an Educational institution.
Senior Assistant	1	Rs. 425-15-500- EB-15-560- 20-700/-	Bachelor's Degree	Five years experience as Assistant/UDC. Preference to be given to those having experience of dealing with establishment work in an educational institution.
Assistants	3	Rs. 330-10-380- EB-12-500 EB-15-560/-	Graduates. Preference will be given to those having worked in an educational institution. The candidates will be required to qualify the prescribed test in General English.	
Stenographer (English)	1	Rs. 425-15-500- -EB-15-560- 20-700/-	Atleast Matriculation. Minimum speed 120 w.p.m. in Shorthand and 40 w.p.m. in English typewriting. Candidates shall also have to qualify in the English Test.	
Steno-typists (English)	8	Rs. 330-10-380- EB-12 500- EB-15 560/-	Matriculation with proficiency in typewriting (35 w.p.m.) and proficiency in Shorthand 80 w.p.m. Candidates shall be required to appear and qualify in the tests in English, Shorthand and typewriting.	
Clerk-typists	3	Rs. 260-6-290- EB-6-326-8- 366-EB-8- 390-10-400/-	Matriculation with minimum speed of 35 w.p.m. in English typewriting.	

1	2	3	4	5	6
Photographer-cum-Artist	1	Rs. 425-15-500-EB-15-560-20-700/-	Essential : a) Matric/Hr. Sec. with Science subjects. b) Diploma in Arts & Photography from a recognised institution.	i) Experience in Micro-filming, Reflex Printing, Projection slide making, Reproduction of Scientific Drawing, Charts & Dark Room Techniques. ii) Practical experience of Photography, developing, Printing, enlarging, colouring & Other processing work. iii) Photomicrography, Black & White & Colour movie Camera. iv) Use of Movie Projector. v) Knowledge of preparing graphs, histograms & charts etc.	
Junior Laboratory Attendants	4	Rs. 260-8-300-EB-8-340-10-380-EB-10-430/-	Matriculation/Higher Secondary with a Diploma/Certificate in Medical Lab. Technology from recognised Institution	3-years experience as Junior Laboratory Attendant in a Medical College/Hospital.	
Junior Laboratory Attendants	2	Rs. 210-4-250-EB-5-270	Matriculation examination with Science subjects from a recognised Board of University.		
Library Assistant	1	Rs. 330-10-380-EB-12-500-EB-15-560.-	Essential : B.A./B.Sc., B.Com., & Certificate in Library Science. Desirable : i) Knowledge of Hindi and some other Modern Indian Languages; ii) Knowledge of typing with minimum speed of 35 w.p.m.		
Library Clerk	1	Rs. 260-6-290-EB-6-326-EB-8-350/-	Essential : Matriculation or Higher Secondary Desirable : Preference will be given to those who hold a Certificate in Library Science.		
Senior Library Attendant	1	Rs. 260-6-326-EB-8-350/-	Matriculation or its equivalent with good handwriting and previous experience of Library work.		

N.P.A. (for candidates with Medical Qualifications) and other allowances as per rules in force from time to time.

The prescribed application form can be had from the Office of the Principal, University College of Medical Sciences, New Delhi-110016 either personally or by sending a self addressed envelope with postage stamp worth Rs. 2.40.

Selected candidates would have to produce original documents relating to their age, qualifications, experience etc. before joining the appointment.

Applications duly accompanied by attested copies of degree and other certificates and a Postal Order for Rs. 5/- drawn in favour of Registrar, University of Delhi (except for the posts of Professor/Reader/Lecturer) should reach the undersigned not later than 9th April, 1977.

**NOTE :**

- i) It will be open to the College to consider the names of suitable candidates who may not have applied.
- ii) Relaxation of any of the qualifications may be made in exceptional cases in respect of all posts on the recommendations of the Selection Committee.
- iii) Canvassing in any form by or on behalf of candidate will disqualify.
- iv) Candidates for post of Professor, Reader and Lecturer only called for interview from outside Delhi will be paid contribution towards railway fare as per rules.

**PRINCIPAL**

**INDIAN INSTITUTE OF  
TECHNOLOGY KANPUR  
IIT POST OFFICE  
KANPUR  
Advertisement No. 9/77**

Applications are invited for five (5) posts of Professors/Assistant Professors/Lecturers in the Department of Physics. The Department is seeking individuals with ability and aptitude for teaching, research and development in the following areas :

1. Laser Physics/Spectroscopy
2. Nuclear Physics
3. Solid State Physics
4. High Energy Physics

(a) Professors : Scale of Pay Rs. 1500-  
60-1800-100-2000-125/-  
250.

**Qualifications :**

**Essential :** Doctorate with excellent academic record and at least eight years of professional experience of good quality outside the work for the degrees. The candidate should have published adequate number of good research papers in journals of repute and/or developmental project reports based on the work outside his own thesis work. The candidate must have demonstrated ability in teaching, guiding and carrying out independent research as evidenced by significant contributions by way publications of good quality in journals of repute.

(b) Assistant Professors : Scale of Pay  
Rs. 1200-30-  
1300-60-1900.

**Qualifications :**

a) **Essential :** Doctorate with good academic record and at least three years of professional experience with good research development record, outside the work for degrees as evidenced by research publications in journals of repute and/or developmental project reports.

b) **Desirable :** Experience in teaching undergraduate/postgraduate programmes—A record of independent research proficiency in the specified (or related) areas of specialization.

c) **Lecturers :** Scale of Pay : Rs. 700-  
40-1100-50-1600.

**Qualifications :**

a) **Essential :** Doctorate with good academic record and adequate research development experience resulting in research papers of good quality.

b) **Desirable :** Some teaching/research experience and a strong interest in developing undergraduate programmes and also in research and developmental activities in the specified (or related) areas.

The Department of Physics teaches undergraduate courses to students majoring in science and to those majoring in engineering and teaches postgraduate physics courses leading to M.Sc. and Ph. D. degrees. The research activities of the Department are at present in the following branches of physics: Magnetic resonance; nuclear physics; lasers and lasers; crystallography; dislocations in crystals; lower temperature physics; solid state spectroscopy; microwave, infrared and optical spectroscopy; high energy physics; and elementary particle theory; nuclear theory and solid state theory.

The Indian Institute of Technology, Kanpur has well equipped laboratories and central facilities. The computer Centre has IBM 7044, 1401 and 1800 and PDP 1 systems as also ECIL TDC 316 and a group of experienced programmers. The following central facilities are available: 2 MV Van de Graaff accelerator; 4996 multi channel analyser and other radiation detection equipment; liquid nitrogen and liquid helium plants; NMR, FPT, Mass Spectrometer, X-ray plant, UV and IR Spectrometers, glass blowing shop, crystal growth facility, central instrumentation laboratory, precision machine shop, electron microscope besides a large workshop for the fabrication of specialised research apparatus. The Institute has a well stocked library with more than 1,50,000 volumes and 1,300 periodicals.

Excellent residential housing, when available is provided on Campus. The campus facilities include a primary and higher secondary schools, a health centre and a shopping centre. Besides there is a modern swimming pool.

In the category of Lecturer, one post will be reserved for SC/ST candidates. In the event of non-availability of SC/ST candidates the reserved post would be treated as deserved.

Posts are permanent and carry retirement benefits in the shape of CPF scheme or CPF-cum-Gratuity Scheme or

GPF-cum-Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. During the first year the appointment will be on probation. Besides, pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back to the shortest route.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm size. Applications should be accompanied by a postal order for Rs.7.50 (Rs. 1.75 for Scheduled Castes/ Tribe candidates).

Applicants from abroad may apply on plain paper enclosing a complete biography and names of three referees from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016 (UP, India) on or before 20th April, 1977.

**UNIVERSITY OF KERALA**

No : Ad. A.II. 3. 310.77

**Notification**

Applications are invited from qualified candidates for appointment to the following posts in the University of Kerala.

1. One post of Reader in Islamic History in the University Department of History.
2. One post of Reader in the University Department of Journalism.
3. One post of Reader in the University Department of Economics.

**Scale of Pay :** Rs. 850 - 1450

Appointments to the posts notified will be made in accordance with Section 6 and Sub Section (ii) of Chapter II of the Kerala University Act of 1974.

Further particulars and application forms can be had from the University Office on production of a receipt for Rs. 2/- remitted in any branch of the State Bank of Travancore or on payment of the amount by crossed postal order payable to the Registrar, University of Kerala, Trivandrum. Requests for application forms should be addressed to the Deputy Registrar (Administration), University of Kerala, Trivandrum.

Last date for receipt of applications is 15-4-1977.

University  
Buildings.  
Trivandrum.  
7-2-1977.

A. Sreedharan Menon  
**REGISTRAR**

PANJAB UNIVERSITY  
(CHANDIGARH)

Advertisement No. 3/77

Applications are invited for the following posts at V.V.B.I.S. & I.S., Hoshiarpur so as to reach the Registrar Panjab University, Chandigarh, by 30-4-1977 alongwith postal orders for Rs. 7.50 for the posts at Sr. No. 1 & 2 and Rs. 5/- for the posts at Sr. No. 3&4.

1. Director Professor-I (Pay-Scale : 1500-60-1800-100-2000-125.2-2500)

**Qualifications :** i) A first or second class Master's degree in Sanskrit of an Indian University or an equivalent qualifications of foreign University with bright academic record.

ii) Either a Research Degree of Doctoral standard or published work of high standard in journals of repute in the field of Vedic Language and Literature.

iii) Atleast 10 years experience of research in Vedic Language and Literature at a University or a recognised Research Institute and sufficient experience of guiding research and supervising research projects. Good knowledge of Nirukta Paniniyan Grammer (Vyakarna).

iv) Working knowledge of Avestan, German and French languages.

2. Lecturer in Sanskrit (Research)—I (pay scale Rs. 700-40-1100-50-1600).

**Qualifications :**

**Essential :** i) A Doctoral degree on a Vedic or grammatical subject or published work of an equally high standard on the subject.

ii) Consistently good academic record with first or high

second class (B Plus) Master's degree or an equivalent degree of a foreign University in Sanskrit (Veda or Vyakarana group).

iii) Specialisation in linguistics. Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his theses or from his published work of very high standard it may relax any of the qualifications prescribed in (ii) above. Provided further that if a candidate possessing a Doctoral degree or equivalent published work is not available or is not considered suitable a person possessing a consistently good academic record (due weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain Doctoral degree or give evidence of published work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfills these requirements.

**Desirable :** i) Five years' experience in collaborative Research or lexicographical work.

ii) Good knowledge of English and French, German or Avestan.

3. Research Assistants-2 (Pay Scale : Rs. 300-25-600)

**Qualifications :**

**Essential :** i) First class Master's degree in Sanskrit with atleast 2 years' research experience or 5 years' experience

in a literary or publishing institution.  
ii) Good knowledge of Linguistics, Vyakarana and Veda.

**Desirable :** i) Proficiency in English French and German or Avestan.

ii) Original papers in Veda, Vyakarana or Linguistics.

4. Teaching Assistants 2 (Pay Scale : 300-25-600)

**Qualifications :**

**Essential :** i) First or high Second Class Acharya in 2 subjects or M.A. with Acharya, the specialisation in one Acharya or M.A. being Veda or Darshana.

ii) Three years' teaching experience in Acharya classes or seven years' in Shishuari classes.

**Desirable :** Proficiency in English.

Incomplete applications and those received after the due date will not be entertained. Persons already in service should route their applications through proper channel. They may send a copy in advance on the prescribed proforma direct to the University. They will, however, be allowed to present themselves for interview only on the production of a 'No Objection Certificate from their employers. Canvassing in any form will disqualify a candidate.

Application form can be obtained from the office of the Finance & Development Officer, Panjab University, Chandigarh by making a written request accompanied with self-addressed stamped envelope of 23 cm x 10 cm.

GARHWAL UNIVERSITY  
SRINAGAR (GARIJAWAL)

Applications are invited for the post of Research Associate at Rs. 800/- p.m. all inclusive for the DST financed research project entitled "Functional Dynamics of Natural Vegetation and Crop Plants at different Altitudes in Garhwal Himalayas". Applicant should be Ph. D. with Plant Physiology Or Plant Biochemistry as specialisation. Preference will be given to those with experience of working on Photosynthetic and Respiratory Processes in Higher Plants. Application should reach to the undersigned latest by the April 10, 1977

Chander Bhan  
REGISTRAR